JOHN WESLEY AMONG THE SCIENTISTS

FRANK W. COLLIER

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JOHN WESLEY AMONG THE SCIENTISTS

By

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TO

ROSE CARLISLE COLLIER

AN APPRECIATION

In his WESLEY AMONG THE SCIENTISTS, Professor Collier has done a service to both religion and science, since he has done a service to historic truth and personal justice. His citations from the little known but extensive writings of Wesley in scientific fields prove that the founder of Methodism was well abreast of the science of his day. He showed greater interest in the study of science in its various branches than is common among the preachers of our time, and he showed greater appreciation of its cultural and religious value than is common among scientists. In both respects Wesley sets an example that should be more widely followed.

EDWIN E. SLOSSON,
Director of Science Service,
Washington. Author of *Creative Chemistry, Sermons of a Chemist,* etc.

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PREFACE

THE purpose of this volume is to let John Wesley reveal himself as an ardent disciple of the physical scientists of his day. The author believes with Doctor Millikan that science and religion working together can revolutionize the world in a generation. Either without the other is incomplete; working together, they bring to men that fullness of life which Christ said he came that men might have. I have tried to show, authenticating every claim, that this was the attitude of John Wesley, and the real source of his marvelous success. Isaac Taylor, who made some sharp criticisms of Wesley and the Methodist movement, nevertheless declared that that movement "presents itself as the starting-point of our modern religious history." And Lecky gives it as his deliberate judgment that "Wesley worked an epoch in English history." Wesley's secret is that each person may be conscious of the indwelling of God, the First Cause, the source of all energy; and that the fixed laws of nature are the secondary causes by which God is ever manifesting himself in nature and human nature.

I believe I have succeeded in correcting the false impression, all too prevalent, that Wesley was interested only in religion. Even Mr. Leslie Stephen, with an ignorance of the work of Wesley that is inexcusable in one who professes to write a *History of English Thought in the Eighteenth Century,* says, "Thus we already find in Wesley that aversion to scientific reasoning which has become characteristic of orthodox theologians." And he further states that "Wesley disbelieves altogether in the Newtonian astronomy." Mr. Stephen was apparently misled by concluding that the volumes published under the title of "Wesley's Works" included all that Wesley wrote. This is far from the fact. So he seems to know nothing of Wesley's *Survey of Natural Philosophy.* And of course he did not know that Wesley, following Bonnet, claimed that "Natural history is the best logic, because it best teaches us to suspend our judgment." And he did not know that Wesley held that Sir Isaac Newton, "like a mighty umpire," stepped in and "confirmed the Copernican system," and that Newton "demonstrated by unanswerable arguments, that it could not be otherwise, without the utter subversion of all the laws of nature." Nor did Mr. Stephen know that it was with difficulty that Wesley kept his devotion to physical science from trespassing upon his divine call to preach the gospel.

PREFACE

The present volume is a by-product of the work in my profession of philosophy. In the pursuit of my study some years ago I came across, in the Library of Congress, an address by Mr. William H. Mills before the Chit Chat Club of San Francisco, entitled "John Wesley, An Evolutionist." This address introduced me to a work by Wesley, apparently known to few, a copy not to be found then even in the Library of Congress. By persistent effort I procured a copy, and wrote two articles which appeared in Zion's Herald, Boston, 1923. Later the substance, with additions, was worked over into a pamphlet published by The Methodist Book Concern under the title suggested by the former Book Editor, Dr. D. G. Downey, "Back to Wesley." Dr. Edwin E. Slosson, Director of Science Service, Washington, D. C., saw the pamphlet, recommended it to his scientific friends, and suggested to me that I write a book upon the subject. The present work is the result of that suggestion.

The pleasant duty remains for me to express my appreciation of those who have aided me. I would first record my gratitude for the inspiration received from Mrs. Collier.

The influence of the late Borden Parker Bowne upon my general philosophical attitude will be evident to all those who were fortunate enough to come under the spell of his powerful mind and gentle spirit, whether by direct personal contact or through his writings. Doctor Slosson, busy man that he is, kindly offered to read the manuscript, which he did, and made invaluable suggestions which have been adopted.

Dr. Clarence True Wilson, the Rev. Raymond V. Johnson, Mr. Charles E. Alden, and Miss Mildred Trueheart, of The National Methodist Press, have rendered valuable services for which this acknowledgment is poor compensation. And I would not forget the unfailing courtesy and aid from the staff of the Library of Congress.

FRANK W. COLLIER.

Washington, D. C.

CHAPTER I

THE CHARM PHYSICAL SCIENCE HAD FOR WESLEY

PHYSICAL science always had a peculiar charm for Wesley. Indeed, the fascination was so powerful that only a stern sense of duty restrained him from giving time to making scientific observations and experiments. His first biographer, who was also his physician, personal friend, and local preacher, gives some facts which help us to understand him in this matter:

> At college he studied with a good deal of care, Euclid, Keil, Sir Isaac Newton's Optics, etc., but he never entered far into the more abstruse parts, or the higher branches of mathematics, finding they would fascinate his mind, absorb all his attention, and divert him from the pursuit of the more important objects of his own profession.

Wesley, though giving himself to religion and theology, always preferred physical science to metaphysics. His biographer continues:

> He was no great friend to metaphysical disquisitions: and I must own, that I always thought

> he held metaphysical reasoning, even when properly and modestly conducted, in too low estimation.
>
> Natural history was a field in which he walked at every opportunity, and contemplated with infinite pleasure the wisdom, power, and goodness of God, in the structure of natural bodies and in the various instincts and habits of the animal creation. But he was obliged to view these wonderful works of God in the labors of others; his various and continual employments of a higher nature not permitting him to make experiments and observations.[1]

Wesley realized, however, that his high calling demanded a broad cultural basis; and he was among the very few young priests of the church who looked upon physical science studies as essential factors in this basis. In this he went counter to the traditions and atmosphere of his beloved Oxford.

Science at Oxford in Wesley's day meant "knowledge gained not by external observation, but by mere reflection." And as late as the days of Kebel, Lord Salisbury relates that this science was done so well that its charm drew "thirty thousand students, who for the sake of learning its teaching were willing to endure a life of the severest hardships." And when the British Association for the Advancement of Science met at Oxford in 1832, and the University conferred degrees upon four of its members, Robert Brown, David Brewster, John Dalton and Michael Faraday, the gentle-spirited Kebel could not restrain himself from saying that "The Oxford Doctors have truckled sadly to the spirit of the times in receiving the hodgepodge of philosophers as they did."[2] Yet just about a century earlier John Wesley, in this atmosphere so indifferent to physical science, had difficulty in keeping it from fascinating him, and tempting him "to make experiments and observations." The cultural importance of physical science became a permanent part of his mental make-up which remained with him throughout his life. As we go through his *Survey* we find that he seems fully acquainted with the best scientific investigators of his own and preceding ages. Sir Isaac Newton—"the great Newton," as Wesley chose to call him—died when Wesley was twenty-four years of age, and thus they were contemporaries. And while at one time after reading William Jones' "ingenious" *Essay on the Principles of Natural Philosophy,* in which the author, following J. W. Hutchinson, attacked Newton's theory of gravitation, Wesley recorded that Jones "seems to have totally overthrown the Newtonian principles; but whether he can establish the Hutchinsonian is another question."[3] It must not be overlooked that it only seemed so to Wesley. This was in 1765, but by the time he had written the third volume of his *Survey* (published in 1770) his profound appreciation for the work and genius of Newton removed all doubt. He accepts the Copernican system enthusiastically, and says of Newton:

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[1] John Whitehead: *Life of John Wesley With Life of Charles Wesley:* vol. ii, p. 286. Philadelphia, 1845.

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[2] Report of the British Association for the Advancement of Science, p. 4, 1832.

> But while philosophers were divided between the Ptolemaic, the Tychonic, the Cartesian, and the Copernican systems, Sir Isaac Newton stepped forward in the plenitude of genius, and like a mighty umpire, laid down the laws of nature and of motion, and by comparing all the phenomena of the heavens, found out the true system of the universe, and confirmed the Copernican system. He demonstrated by unanswerable arguments, that it could not possibly be otherwise, without the utter subversion of all the laws of nature.[4]

Wesley had read Newton's *Principia* in the original Latin edition as edited by Dr. Horsely, and greatly admired the author, referring to him, as has been said, as "the great Newton." And he had a very poor opinion of the theories of Hutchinson, who so violently attacked Newton.[5] "Hutchinson held that the Old Testament contained a complete system of natural philosophy, as well as a revelation of religious truth, and that the interpretation of it must not be literal but allegorical."[6] Now, Wesley was dreadfully handicapped with his view of the infallible (though he did not like the word)[7] inspiration of the Scriptures—but his intellectual honesty prevented his countenancing the method which lends itself to making the Scriptures mean anything one's whim might dictate. Wesley held that it is "reason (assisted by the Holy Ghost) which enables us to understand what the Holy Scriptures declare."[8] Hence both his moral and intellectual natures revolted, and he would have none of Hutchinson's philosophy. He did not consider Hutchinson's *Principia* in the same class with "the great Newton's" *Principia.* He disposes of Hutchinson rather curtly, not to say contemptuously, by quoting him as describing Milton's *Paradise Lost* as "that wicked farce."[9] Wesley's estimate of *Paradise Lost* is evident from the fact that he edited an edition of "that truly excellent poem," beginning his introduction with these words: "Of all the poems which have hitherto appeared in the world, in whatever age or nation, the preference has generally been given, by impartial judges, to Milton's *Paradise Lost.*[10]

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[3] Wesley: *Journal,* vol. v, p. 149. October 9, 1765.

[4] *Survey,* vol. ii, p. 112.

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[5] *Journal,* Curnock's Edition, vol. iv, pp. 147, 190, 261, 280; vol. v, 353; vi, 6.

[6] *Ibid.,* vol. v, p. 353, note 3.

[7] *Works,* vi, p. 554.

[8] *Sermons,* vol. ii, p. 128.

[9] *Ibid.,* vol. ii, p. 25.

That the charm that physical science had for Wesley may be better appreciated, we give a list of some of the scientists with whom, through their works, this busy evangelist found "leisure" to become acquainted. And it can be soberly said that it would be difficult to name a scientist of the first rank, ancient or modern, with whom Wesley was not well acquainted.

Next to Newton in the esteem of Wesley came Aristotle and Francis Bacon. He considered Aristotle "a universal genius,"[11] though he severely reprimanded the schoolmen for following him in mixing with his physical investigations "his abstract and metaphysical notions," instead of holding himself "to search out the properties of particular things." After this reprimand he goes on to say of the schoolmen:

"But it was their misfortune, to neglect what was commendable in him, and to follow only what was blameworthy; so as to obscure all philosophy, with abstract, idle, vain speculations."

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[10] *Works,* vol. vii, p. 601.

[11] *Journal,* vol. vii, p. 340. November 5, 1787.

On the other hand, he commended the schoolmen for producing such investigators as Roger Bacon and Albertus Magnus, who, "after the Arabians had introduced the knowledge of chemistry into Europe, were wise above the age they lived in; and penetrated so far into the secret recesses of nature, as scarcely to escape the suspicion of magic."[12]

Francis Bacon he knew well, considering him along with Aristotle as having "a universal genius."[13] He read Bacon's *Ten Centuries of Experiments,* with the following comment: "Many of them are extremely curious, and many may be highly useful."[14] After speaking of the new light thrown upon natural philosophy after the revival of learning, he adds: "And none was more serviceable herein than Lord Bacon: who, well understanding the defects of the school-philosophy, incited all lovers of natural philosophy to a diligent search into natural history. And he himself led the way, by many experiments and observations."[15]

Buffon, his contemporary, he had read critically. He intended to go through his entire *"Histoire naturelle, générale et particulière."* But, while praising him for some things, he had such a poor opinion of his powers of observation and of his judgment that he considers that "I dare not spend my time so idly."[16] Wesley's laconic criticisms, both favorable and adverse, are in substance those of competent critics in general. Darwin speaks slightingly of Buffon's observations on American natural history.[17] Thomson says Buffon in his treatment of heredity "dealt only with superficialities."[18] Williams practically agrees with this judgment upon Buffon's life-work, holding that he was not quite equal to his task; although his *Natural History* did mark an epoch in the study of natural science, it has no scientific value. It is admitted to-day that many of his views and theories have proved to be false.[19]

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[12] *Survey,* Introduction, pp. xii, xiii.

[13] *Journal,* vol. vii, p. 340. November 5, 1787.

[14] *Ibid.,* vol. vii, p. 167. May 11, 1786.

[15] *Survey,* Introduction, p. xiii.

Another modern writer holds that "Buffon himself was never an original investigator nor even an observer. He was a compiler and popularizer of scientific matters, which he presented in an attractive, even brilliant way, and upon which he framed theories and generalizations, some of which were notable as foreshadowing the evolutionary notions of the succeeding generation."[20]

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[16] *Works*, vol. vii, pp. 441-445.

[17] Charles Darwin: *Naturalist's Voyage Round the World*, p. 173. New York, 1872.

[18] J. Arthur Thomson: *Heredity*, p. 113. New York, 1907.

[19] Henry Smith Williams: *The Wonders of Science in Modern Life*, vol. x, p. 88. New York, 1912. (Funk and Wagnalls permission.)

We have cited these modern critics to show that Wesley was a keen critic in passing upon the results of scientific investigators, and upon the ability of the scientists. Indeed, his paper, *Remarks on the Count De Buffon's "Natural History,"* is worth reading for its humor, its laconic wit, and the knowledge it reveals to us of the advance made in science since Wesley's day.[21]

There now follow the names, with brief references to the accomplishments of each, of some physical scientists with whose work we know Wesley was well acquainted:

Robert Boyle (1627–1691), "the Father of Chemistry," one of the founders of the Royal Society, physicist and theologian. He "succeeded Bacon in the reputation of being the greatest English scientist of his time." He performed twenty-seven experiments to prove that heat is nothing but motion.

Giovanni Domenico Cassini (1625–1712), the first of the family which for four generations filled the post of director of the Paris

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[20] *International Encyclopædia,* vol. iv, p. 118.

[21] *Works,* vol. vii, p. 441.

Observatory. He discovered four of the seven moons of Saturn that were known in Wesley's time, with the queerest kind of telescopes, from one hundred to one hundred thirty-six feet long; and he was the first to make systematic observation of the zodiacal light.

Jan B. Van Helmont (1577–1644), the greatest chemist of his age, and the one "who coined the word 'gas.' "

Cardinal Cusa (1401–1464), who held the sun-center theory, the world being one of the planets revolving round the sun; and he believed in the plurality of worlds.

Giovanni Borelli (1608-1679), "founder of the intraphysical school," and supposed to be the first to discover the parabolic paths of comets.

William Harvey (1578–1657), the discoverer of the circulation of the blood.

Antoine L. Lavoisier (1743–1794), who "introduced a new chemical nomenclature which has remained practically unchanged, except in the matter of additions, to the present time."

Marcello Malpighi (1628–1694), the father of microscopic anatomy.

Hermann Boerhaave (1668–1738), investigator in botany and chemistry, who devised a new system of medicine.

Tycho Brahe (1546–1601), brilliant astronomer, discoverer of a new star in Cassiopeia, but who rejected the Copernican system.

Albrecht von Haller (1708–1777), "the father of modern nervous physiology."

John Swammerdam (1637–1680), a great naturalist whose "work laid the foundation of the modern science of entomology."

Sir William Herschel (1738–1822), great astronomer, one from whom Wesley quotes much, and who "determined definitely that the stars are suns."

Johann Kepler (1571–1630), famous for his three laws of planetary motion, and who is one of the founders of modern astronomy.

Christian Huygens (1629–1695), who invented the pendulum clock, and who convinced Wesley, in his *Conjectures on the Planetary World,* that the moon is not inhabited.

James Bradley (1639–1720), whose discovery of the aberration of light and other remarkable astronomical phenomena caused Newton to style him "the best astronomer of Europe."

Charles Bonnet (1720–1793), who described for the first time, in his study of the *aphids,* parthenogenetic reproduction, or virgin birth, in the animal kingdom, and who originated the term "evolution" in natural science, but by which he meant the successive unfolding of preformed germs.

Denis Papin (1647–1712), coworker with the great Boyle, inventor of the digester and the safety valve, which is an essential part of it, the inventor of the double air-pump, and the first to construct a steam engine with a piston.

Johannes Hevelius (1611–1687), famous for his accurate description of the face and spots of the moon, and next to Gassendi in observing the transit of Mercury.

Jean Baptiste Labat (1663–1738), Roman Catholic priest who gave so much of his time to travel for scientific purposes, and whose observations of the humming bird are so interesting.

William Jones (1726–1800), keen thinker in scientific matters, and vigorous opponent of Newton's theories.

Réné Réaumur (1683–1757), who tinned iron for the first time, and who was the first to construct a thermometer making the zero point coincide with the freezing point.

Stephen Hales (1677–1761), the "father of true vegetable physiology," and who stressed the evils of drinking spirits.

Joseph Priestley (1733–1804), discoverer of oxygen and early experimenter in electricity.

Jean Pecquet (1622–1674), discoverer of the course of the lacteal vessels, including the receptaculum chyle, or reservoir of Pecquet.

Réné Descartes (1596–1650), "father of modern philosophy," inventor of analytic geometry, which invention may be said to constitute the point of departure in modern mathematics.

Peter Collinson (1694–1768), writer on electricity, and the one to whom Benjamin Franklin was indebted for the first information in 1745 regarding the progress of the new electrical experiments in Europe.

Charles Marie de la Condamine (1701–1774), "who introduced caoutchouc into Europe, promoted the inoculation for smallpox, and urged the adoption of a universal measure of the length of a second pendulum at the equator."

John Ray (1628–1705), the first to attempt a classification of plants and animals which should express their natural relationships, and he was the first to introduce a workable definition of the term "species."

Edmund Halley (1659–1742), who predicted that in seventy-five years the comet which bears his name would return; and he is the one to whom humanity in general, and the world of scientists in particular, are indebted for the publishing of Newton's *Principia*.[22]

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[22] Sir David Brewster: *Life of Sir Isaac Newton*, vol. i, p. 307. Also, Newton's Preface to his *Principia*.

Carlos Linnæus (1707-1778), the first to use a binomial nomenclature, and "who more than any other has influenced modern systematology."

Bishop Erik Ludvigsen Pontoppidan (1698–1764), who produced a good natural history of Norway, but whom Wesley considered absurdly credulous in accepting as true the stories of the fabulous Kraken.

Oliver Goldsmith (1728–1774), who wrote the *History of the Earth and Animated Nature,* which Wesley considered an "ingenious book," but he censures the author for considering it presumption for anyone "to deny the existence of Bishop Pontoppidan's Kraken, and the sea-serpent: the one a mile across, the other raising himself out of the water, higher than the main mast of a man of war!" What Goldsmith held to be true Wesley rejected as "gross absurdities." And one only needs to read Bishop Pontoppidan's account to be convinced that Wesley did not express his rejection of that account in too strong language.[23]

Gasparo Aselli (Latin, Asellius, 1580–1628), famous for his discovery of the lacteal vessels in 1622, the account of which he gave in his *De Lactibus sive Lacteis Venis,* 1627.

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[23] Eric Ludrigsen Pontoppidan: *The Natural History of Norway,* English Translation, Part II, pp. 210-218. London, 1755.

Dr. George Cheyne (1671–1743), whose *Treatise on Fluxions* procured his election to the Royal Society. He also was the author of *Philosophical Principles of Natural Religion, Essay on Health and Long Life,* and *The English Malady.* All of these works were the result of his experience in which he reduced his own weight from four hundred forty-eight pounds to normal.

Horace Bénédict de Saussure (1740–1799), a Genevan naturalist, who was helped in his work by his uncle, Charles Bonnet, and the great Haller. He ascended Mont Blanc, 1788. He invented the cyanometer and the diaphanometer. Cuvier said "his labours were infinitely valuable to naturalists."

Guichard Joseph Duverney (1648–1730), who made such valuable discoveries through vivisection; and who did so much to increase the knowledge of the physiology of sight and hearing.

That every branch of physical science fascinated Wesley is evident from this selected list of scientific writers covering so many subjects, and from the interest he manifests, no matter what the science is with which he comes in contact. And it would be difficult to say which particular science he preferred.

He speaks of the "sublime and interesting subjects of astronomy," and he says that chemistry is what has given the moderns the great advantage they have over the ancients. He adds: "But the most extraordinary and important discoveries and improvements which have been made in later ages, which have enriched the world with useful knowledge, and exalted the modern, to a conspicuous degree of pre-eminence over the ancient philosophy; which have ushered in a new dawn to the scientific world, and substituted rational theories for obscure dogmas, are unquestionably those in the chemical department of philosophy."[24]

Almost the same interest, however, he manifests for every particular science he considers. This is evident in his discussions of the following sciences which we name in modern terminology: physics, geology, and the different branches of biology—zoology, botany, entomology, physiology, anatomy, and comparative anatomy (Wesley uses this term).[25] He is especially interested in medicine, both preventive and remedial. He wrote a book entitled *Primitive Physic.* Naturally, the problems of psychology commanded his attention, and he, following Bonnet, even anticipated by one hundred and thirty years the advent of an Alfred Binet with his mental measurements:

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[24] *Survey,* vol. i, Introduction, p. xv.

[25] *Ibid.,* vol. i, p. 125.

> May not the number of just consequents which different minds deduce from the same principle, serve as a foundation for constructing a psychometer upon; and may we not presume that one time or other we shall be enabled to measure spirits as we now do bodies?[26]

Certainly, we are making earnest efforts to measure spirits, or minds, to-day; but that we have as yet contrived a psychometer which does actually measure the mind is not so evident.

But if there was one branch of physics which commanded his enthusiastic attention more than any other, it was the old subject of electricity with the new life it was taking on in his day. He was interested in it both from the practical and theoretical standpoint. And it is because Benjamin Franklin combined these two[27] that Wesley had such great admiration for him in his experiments in electricity. Franklin began his work in electricity in 1746, the year that Peter Collinson, a member of the Royal Society, sent an electric machine to Philadelphia. Franklin forwarded a series of papers describing his experiments and showing his theoretical conclusions, to his friend Collinson.[28] The papers were read by Collinson before the Royal Society. They were laughed at. This hurt Collinson very much, but he persevered. He then tried to get Edward Cave, the founder and editor of the *Gentleman's Magazine and Historical Chronicle,* to publish them. Cave did not have the courage, the attitude of so many members of the Royal Society being what it was, to run them in his new enterprise, the first of its kind in the world; and which fortunately still exists.[29] Cave did, however, issue them in pamphlet form in 1751. Wesley read the pamphlet, and gave its contents the most cordial reception, which was quite the opposite to that which they received from many of the scientists of the Royal Society. On February 17, 1753, we find the following entry in Wesley's *Journal:*

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[26] *Ibid.*, vol. ii, p. 214; Bonnet: *Contemplation de la Nature*, vol. i, p. 82.

[27] "There are no electrical theories of any kind which go back of Benjamin Franklin."—Robert Andrews Millikan, *The Electron, Its Isolation and Measurement and the Determination of Some of Its Properties*, p. 11. Chicago, 1917.

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[28] Benjamin Franklin, *New Experiments and Observations on Electricity Made at Philadelphia.* Third Edition. London, 1760.

[29] Edward Cave, under the pseudonym, "Sylvanus Urban," edited his *Journal* from its founding in 1731 to his death in 1754. It is "the first literary journal of its kind ever published." Boswell's *Life of Johnson.* Edited by Augustine Birrell. In six volumes. Westminster, England, and Boston, Mass., 1904. Vol. i, p. 307. It is interesting to note that after being persuaded for forty years by the more intelligent and far-seeing of his followers, Wesley finally gave way to them and founded the *Arminian Magazine,* which has had, like the *Gentleman's Magazine,* a continuous history to the present; although, unlike the latter, it has changed its name a number of times. We believe these journals have the honor of being the oldest of their kind in the world.

> Sat. 17.—From Dr. Franklin's *Letters* I learned (1) that electric fire (ether) is a species of fire, is finer than any yet known; (2) that it is diffused, and in nearly equal proportions, through almost all substances; (3) that, as long as it is thus diffused, it has no discernable effect; (4) that if any quantity of it be collected together, whether by art or nature, it then becomes visible in the form of fire, and inexpressibly powerful; (5) that it is essentially different from the light of the sun, for it pervades a thousand bodies which light cannot penetrate, and yet cannot penetrate glass, which light pervades so freely; (6) that lightning is no other than electric fire, collected by one or more clouds; (7) that all the effects of lightning may be performed by the artificial electric fire; (8) that anything pointed, as a spire or tree, attracts the lightning, just as needle does the electric fire; (9) that the electric fire, discharged on a rat or a fowl, will kill it instantly, but discharged on one dipped in water, will slide off, and do it no hurt at all. In like manner the lightning which will kill a man in a moment will not hurt him if he be thoroughly

wet. What an amazing scene is here opened for after-ages to improve upon![30]

Wesley's work as a preacher of the gospel prevented him from indulging his desire to make experiments in physical science, but this did not prevent his satisfying that desire to the extent that he might relieve human bodies from pain. So he procured an electrical machine and treated himself and treated others with much success. His records of these treatments read like the reports of a medical clinic.

Finally Collinson's unflagging zeal for electricity and for Franklin's really great work was rewarded; for the members of the Royal Society at last aroused themselves from their lethargy, realizing that they were hindering the purpose for which they were organized—the advancement of physical science. This purpose was best described by Sir Isaac Newton when he wrote out a plan for the Society:

> Natural philosophy consists in discovering the frame and operations of nature, and reducing them, as far as may be, to general rules and laws—establishing these rules by observations and experiments, and thence deducing the causes and effects of things.[31]

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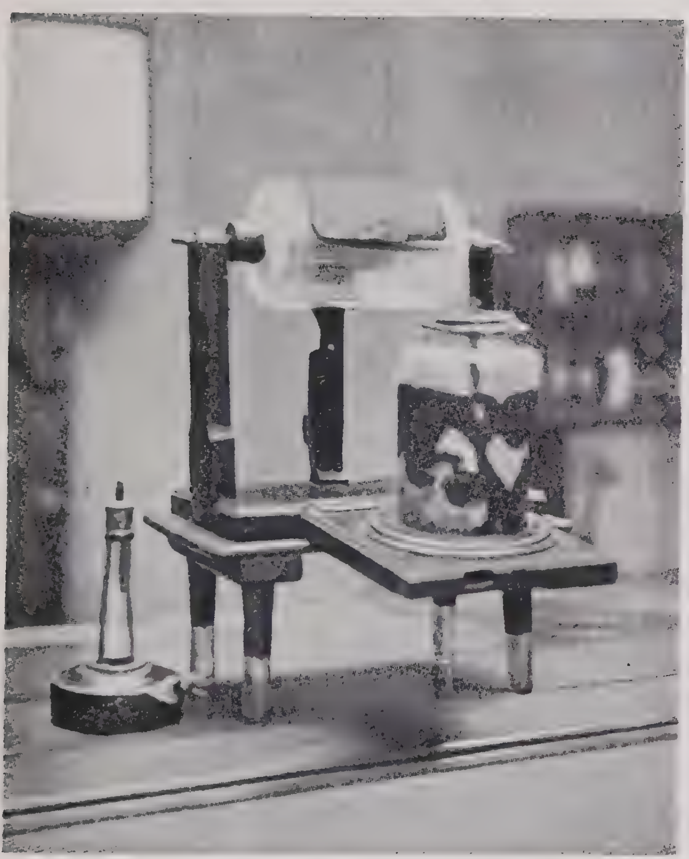
[30] *Journal,* vol. iv, p. 53. February 17, 1753.

[31] Sir David Brewster: *Memories of Newton,* vol. i, p. 102.



WESLEY'S ELECTRICAL MACHINE

Now in the Mission House Museum. Formerly at Woodhouse Grove School, where it was used to illustrate lectures on natural science, and to amuse the boys.

This is just the work Franklin was doing. And the remarkable thing is that Wesley saw this long before all but a few of the members of the Royal Society saw it. But it required no little pressure from forces outside of the Society to cause it to act. Collinson was aided by the letters which Louis XV. had caused to be written to the Royal Society strongly indorsing Franklin's work; and by George III, who, though he hated Franklin's political philosophy and activities, warmly espoused his work in electricity. Naturally, this position of the king had great influence in arousing the scientific slumberers.[32]

So in 1753 the Royal Society bestowed upon Franklin the coveted Copley Medal. The account is worth quoting:

> At the meeting of the Royal Society, on this day, the annual benefaction of Sir Godfrey Copley, Bart. (the gift of which, on the death of Sir Hans Sloane, developed upon the president and council), was, in a gold prize medal, adjudged to Benjamin Franklin, Esq.; of Philadelphia (not of Maryland as mentioned in our last magazine) for his useful discoveries in electricity; and delivered to be transmitted to him by the care of his worthy friend, P. Collinson, Esq.; fellow of the Royal Society. On this occasion the earl of

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[32] James Parton: *Life and Times of Benjamin Franklin,* vol. i, p. 293. New York, 1864.

Macelsfield, their president, delivered a speech, which, greatly enhances the value of the prize, and does honor to the judgment, candor, and strict impartiality of the society.[33]

In 1756 Franklin was made a member of the Royal Society, the initiation fee and all dues being remitted.[34] The remitting was due to the fact that Franklin did not apply for membership, it having been bestowed upon him on the initiative of the Society. Thus Collinson was rewarded for all his efforts.

When it is remembered that Franklin began his experiments in electricity in 1746 and wrote letters to Peter Collinson for five years on the subject; that it took the combined persistence of Collinson, the influence of Louis XV and of George III, and the actual successful experiments in Europe, together with the experiments of Franklin himself, proving that lightning is the same as electricity, to make the Royal Society seriously consider the great work then going on, we can better appreciate the devotion of Wesley to scientific progress. This spirit caused him to take time out of his busy life of preaching which meant speaking three times every week-day and four or five times on Sunday, to go with some friends to see some experiments in electricity. After observing these experiments he is not at all backward in expressing his opinion of the excessively skeptical as "half-thinkers":

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[33] *Gentleman's Magazine,* December, 1753, p. 327.

[34] Charles Richard Weld: *A History of the Royal Society.* In 2 volumes, vol. ii, p. 7. London, 1848.

> Fri. 16.—I went with two or three friends to see what are called electrical experiments. How must these also confound those poor half-thinkers who will believe nothing but what they can comprehend! Who can comprehend how fire lives in water and passes through it more freely than through air? How flame issues out of my finger, a real flame, such as sets fire to spirits of wine? How these, and many more strange phenomena, arise from the turning a glass globe? It is all mystery; if haply by any means God may hide pride from man.[35]

To appreciate the scientific curiosity of Wesley, the charm all such scientific demonstrations had for him, and his open-mindedness and intellectual independence, it must not be forgotten that these visits with his scientific friends to see electrical experiments took place six years before the Royal Society recognized Franklin's work and nine years before Franklin was elected a member of that society.

As we have seen that Wesley preferred physical science to metaphysics, so there are good reasons for saying that he preferred science to art. To him nature everywhere manifested beauty and perfection, and for him the art of man cannot compare with that of nature:

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[35] *Journal*, vol. iii, p. 320. October 16, 1747.

> The nearer we examine the works of nature, even in the least and meanest of her productions, the more we are convinced nothing is to be found there but beauty and perfection. View the numberless species of insects—what exactness and symmetry shall we find in all their organs! What a profusion of coloring—azure, green, vermillion! What fringe and embroidery on every part! How high the finishing, how inimitable the polish we everywhere behold! Yea, view the animalculae, invisible to the naked eye, those breathing atoms, so small they are almost all workmanship: in them too we discover the same multiplicity of parts, diversity of figures, and variety of motions, as in the larger animals.[36]

He compares the finest needle with the sting of a bee under the microscope. The former is irregular and unequal; the latter "appears to have in every part a polish most amazingly beautiful, without the least flaw or inequality, and ends in a point too fine to be discerned by any glass whatever."[37] The same regularity and beauty are in the vegetable kingdom:

> The same regularity and beauty is found in vegetables. Every stalk, bud, flower, and seed,

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[36] *Survey,* vol. i, p. 367.

[37] *Ibid.,* vol. i, p. 367.

displays a figure, a proportion, a harmony, beyond the reach of art.[38]

Wesley goes on to review the entire cosmos, and concludes that the "whole universe is a picture, in which are displayed the perfections of the Deity. It shows not only his existence, but his power, his wisdom, his independence, his goodness." And admiration for nature could not be expressed in higher terms than those chosen by Wesley in giving voice to this thought: "Nature is the art of God, and it must ever be unrivaled by the sons of men."[39]

In addition to this innate love of nature, which caused every problem of natural science to have charm for him, Wesley had an insatiable intellectual curiosity. Whenever he heard of any strange phenomenon he counted neither trouble, pains, nor—even that which he was most jealous of—time, but was off to examine or investigate it. He did not reject the testimony of those he believed to be reliable; but testimony did not satisfy him if he could make a first-hand test. And he was skeptical of accepting reports if they were not from eye-witnesses. In this respect Wesley was distinctly not the child of his age. His formative period was the early eighteenth century. "The typical mental attitude in the early eighteenth century was that of acceptance, as distinct from that of wonder, curiosity, or challenge."[40] Curiosity, wonder, challenge were inherent in Wesley. And there is no evidence that these qualities were ever discouraged by his parents. "It is the first five years of a child's life that are of the greatest importance in the shaping of his character and attitude to the world."[41]

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[38] *Ibid.,* vol. i, p. 368.

[39] *Ibid.,* vol. i, p. 371.

It is true, as Wesley's chief biographer says, "We have few facts of Wesley's early childhood."[42] But the few that we do have lead us to believe that these qualities were encouraged. If the innate curiosity, wonder, and challenge had been discouraged that would have probably been fatal to his future interest in physical science." Dr. E. H. Reede holds that "A child whose curiosity has been early discouraged will never be a great scientist."[43]

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[40] Sidney G. Dimond: *Psychology of the Methodist Revival,* p. 25. Oxford, 1926.

[41] R. H. Hingley: *Psycho-Analysis,* p. 130. London, 1921. J. A. Hadfield: *Psychology of Power,* pp. 17-19. New York, 1923. Reprinted by permission of The Macmillan Company.

[42] L. Tyerman: *The Life and Times of the Reverend John Wesley, M.A., Founder of the Methodists.* In three volumes. Vol. i, p. 19. Sixth Edition. London, 1890.

[43] Harvey O'Higgins: *The Secret Springs,* p. 103. Reprinted by permission of Harper and Brothers. New York, 1920. This volume records conversations the author had with Doctor Reede, who is a distinguished Washington psychiatrist.

Everything suggests that that childhood curiosity was so well developed through the period of early training that in his maturity it caused him to give some of his leisure time for fourteen years[44] in covering the field of physical science. And it must be remembered that leisure with Wesley meant only change of occupation—that is, his main occupation of spreading Scriptural holiness over the land. And he covered the field of natural science so thoroughly that his own appraisal of his *Survey,* "the most complete of its kind of any in the English tongue,"[45] has been accepted by others as correct.

This curiosity seemed to be confined to no special fields. "In the many-sidedness of his education, and in his unwearied interest in all branches of knowledge, he is without peer amongst revival preachers in any age."[46] And it was so inherent and commanding that his devotion to religious work restrained him only with difficulty. Preaching "commonly three times every week-day, and four or five times on Sunday"[47] did not prevent his thinking it "worth while to make an odd experiment" in animal psychology. He says: "Remembering how surprisingly fond of music the lion at Edinburgh was, I determined to try whether this was the case with all animals of the same kind."[48] Elsewhere he tells of his experience with the lion at Edinburgh: "I saw a large and fierce lion which was then kept at the infirmary at Edinburgh, quite transported with the sound of a bagpipe, and rolling upon its back with the utmost satisfaction. I likewise saw the old lion in the tower of London listen with the utmost attention to a German flute. Meantime a young tiger leaped up and down incessantly, till the music ceased."[49]

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[44] George Eayrs: *John Wesley: Christian Philosopher and Church Founder,* p. 76. London, 1926.

[45] Works, Circular Letter to Assistant Preachers, vol. vii, p. 105.

[46] Dimond: *op, cit.,* p. 45. Quoting Fred. Loofs, from Brigden, *New History of Methodism,* vol. i, p. 162.

Wesley quotes Plutarch as stating that, of all irrational creatures, deer and horses are the most affected with music, and he cites a Mr. Playford as confirming Plutarch from his own experience; and Wesley adds on his own account that lions, elephants, many dogs, and most, if not all, singing birds are susceptible to music. Then he gives the experience of a French "captain of the Regiment of Navarre," who was confined in prison for six months.

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[47] J. H. Riggs: *The Living Wesley*, p. 140. London, 1891.

[48] *Journal*, vol. v, p. 140. December 31, 1764.

[49] *Survey*, vol. ii, p. 179.

He begged leave of the governor that he might send for his lute. After four days he was astonished to see at the time of his playing, the mice come out of their holes, and the spiders descend from their webs, which came, and formed a circle round him, to hear him with attention. This at first so surprised him that he left off, on which they all retired quietly to their lodgings. It was six days before he recovered from his astonishment. He began to play again. They came again, and still in increasing numbers, till after a time he found a hundred of them about him.[50]

Wesley is not so sure of this story, although, in the light of his experiments with the lions and tigers, he says, "It may be literally true." It is quoted here, with the other references of the influence of music upon animals, to illustrate how this itinerant preacher's fascination for natural science competed with his work as an evangelist.

Let us now see him describing something that had all the elements of delight for him. It is a creature that is difficult to say whether it is plant or animal, and he can test it by experiment. It is the Animal-Flower of Barbadoes. When you touch it the creature acts like a sensitive plant. "But on a nearer inspection we may discern four dark colored filaments, rising from the center, moving with a quick and spontaneous motion, and frequently closing, to seize its prey, much like the claws of a lobster. So the seeming flower is really an animal; and its body, which appeared to be the stalk of the flower, is black, about as big as a raven's quill."[51] Here we have an example of "that admirable graduation there is among all things."[52] This is to be taken literally. For "this amazing progression rises by degrees from the vortex of amber to the solar vortex; from the sphere of man to that of an angel."[53] We shall take up this subject more in detail when we come to consider evolution.

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[50] *Survey,* vol. ii, p. 178.

Wesley in his *Survey* is continually including items that he thinks will be interesting to the curious. As a matter of fact, he is the curious one. Trees, he points out, "observe fixed laws, and a certain order of leafing." Then he mentions the curious variety of ways these fixed laws work. He names nineteen different kinds of trees leafing at different dates from January 15 to April 22 at Norfolk, in 1755. He notes also, what seems strange to him, that some plants vary much as to the date of leafing, as the spring is earlier or later; "others of them, be the winter ever so mild, do not put out before their time." He records also even a stranger phenomenon: "There is a species of willow which appears to change its sex every year. One year it produces male blossoms, and female blossoms the next."[54]

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[51] *Ibid.,* vol. i, p. 215.

[52] *Survey,* vol. ii, p. 266; *Bonnet: Contemplation de la Nature,* vol. i, p. 232.

[53] *Survey,* vol. ii, p. 192; *Ibid.,* vol. i, p. 18.

We have given merely a few examples. Almost every page devoted to the description of plants contains curiosities which command the attention of the reader. And they are so interesting that one feels it would be worth while to check up these accounts in the light of our modern knowledge.

Intellectual curiosity is morally neutral. Discoveries and inventions do not necessarily lift human beings to a higher plane of living. What they actually do is to give us a better physical basis of life, and arouse the intellectual life to a greater activity. But it by no means follows that we shall be happier because of them. Abiding happiness (in distinction from passing pleasure) which we are all seeking, consciously or unconsciously, depends upon moral development; for the latter determines just how we will use our knowledge, discoveries, and inventions. So intellectual curiosity alone does not explain the peculiar charm natural science had for Wesley.

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[54] *Survey,* vol. i, p. 330; *Ibid.,* vol i, p. 232.

Religion was the all dominating factor in his life. It meant to him, what it does to all to whom it is a living reality—conscious communion with the Infinite, or God. H. G. Wells, in one of his more serious moments, describes from his own experience the reality of religion in terms that would have the approval of Wesley; for Wells finds that he is quite orthodox when he experiences reality. His words are:

> Yet at times I admit the sense of personality in the universe is very strong. If I am confessing, I do not see why I should not confess up to the hilt. At times in the silence of the night and in rare lonely moments, I come upon a sort of communion of myself and something great that is not myself. It is perhaps poverty of mind and language that obliges me to say that this universal scheme takes on the effect of a sympathetic person, and my communion a quality of fearless worship. These moments happen and they are the supreme fact in my religious life to me; they are the crown of my religious experience.[55]

Here we catch Mr. Wells at his best; and he admits he is at his best: "These moments happen and they are the supreme fact in my religious life to me; they are the crown of my religious experience." In "these moments" he escapes from the formalities of the reason and enters into the realities of experience; for religious experience is essentially personal. And personality, that is, self-conscious and self-directing intelligence, is the highest conception of being that we have. So it is not strange that, "in the silence of the night and in rare lonely moments," when he comes upon "a sort of communion of myself and something great that is not myself," that great something should take on the form of personality. The facts of history agree with Mr. Wells' experience; for from the beginning to the present hour personification in man has been primitive and primary. As Hoeffding holds, "even the momentary and special gods implied the existence of a personifying tendency and faculty." And Jevons adds: "Religion from the beginning has been the search after a power essentially personal."[56] And long ago Emerson pointed out the way which leads to such an experience as Mr. Wells "at times" has: "In your metaphysics you have denied personality to the Deity, yet when the devout motions of the soul come, yield to them heart and life, though they should clothe God with shape and color."[57]

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[55] H. G. Wells: *First and Last Things,* p. 69. Reprinted by permission of G. P. Putnam's Sons, publishers, New York and London.

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[56] Frank B. Jevons: *Introduction to the Study of Comparative Religion*, p. 136. New York, 1908. Reprinted by permission of The Macmillan Company.

To be sure, there are a timidity and a sense of rarity in this confession of Wells where we would find in Wesley the boldest assurance and the experience of permanent triumph. From childhood Wesley was religious in the sense that Christian people in general are religious. After the never-to-be-forgotten meeting in Aldersgate Street[58], however, religion meant all it did before—obedience to the ethical teachings of Jesus Christ and attendance upon church worship: but it meant something in addition—it meant the experience of the love of the Almighty Father in his heart.

Now, anyone who knows the mind of Wesley in its essential make-up must conclude that any sort of religion short of this would keep such a one as Wesley miserable. His mind was essentially that of the scientist; God, with him, must be Reality that must be experienced. Wesley would heartily agree with a modern scientist's statement of the case. It is the pragmatic test, and the following words state it both subjectively and objectively:

This is the scientific method, and this is the method of Jesus. "If any man will do his will, he shall know of the doctrine whether it be of God or whether I speak of myself." John sent two of his disciples to Jesus to ask if he were the Christ: "Then Jesus answering said unto them, Go thy way, and tell John what things ye have seen and heard." It was the pragmatic test to which he appealed, how his religion worked, the severest and the certainest test in the world. Christianity, insofar as it is truly Christian, rests upon the same solid foundation as chemistry.[59]

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[57] Ralph Waldo Emerson: *Essays,* "Self-Reliance"

[58] *Journal,* vol. i, p. 465. May 10, 1738.

Wesley had the scientific mind which insists that the test of truth is that it must be verifiable; and he had nothing but agony of soul until he could verify religion in his life. He tells us the story of his agonizing. It runs from Wednesday, May 10, to Saturday, the 13th: "I was sorrowful and very heavy; being able neither to read, nor meditate, nor sing, nor do anything."[60]

He was miserable because his scientific mind would not allow him to accept a religion that did not stand the test of experience. Such a religion basically must rest upon faith; but faith in a vital sense was a rare thing in the churches in Wesley's day. He writes his brother Charles:

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[59] Edwin E. Slosson: *Sermons of a Chemist,* p. 69. New York, 1925

[60] *Journal,* vol. i, p. 460. May 10-13, 1738.

> I have seen upon this occasion more than ever I could have imagined, how intolerable the doctrine of faith is to the mind of man, and how peculiarly to *religious* men. One may say the most unchristian things, even down to Deism; the most enthusiastic things, so they proceed but upon mental raptures, lights, and unions; the most severe things, even the whole region of ascetic mortification; and all will be forgiven. But if you speak of faith in such a manner as makes Christ a Saviour to the utmost, a most universal help and refuge; in such a manner as takes away glorying, but adds happiness to wretched man, as discovers a greater pollution in the best of us than we could before acknowledge, but brings a greater deliverance from it than we could before expect—if anyone offers to talk at this rate, he shall be heard with the same abhorrence as if he were going to rob mankind of their salvation, their Mediator, or their hopes of forgiveness.[61]

Wesley was right in insisting that in his search for God, or Ultimate Reality, faith was the fundamental thing. And in this matter he has the great scientists with him. Merz, in his great work, which J. Arthur Thomson describes as "a work of magistral scholarship and deep insight," claims that "Ultimate Reality is not to be reached by thought, but must be felt, lived, and experienced; and when human language and ideas fail, creation in Art and living Events must come to our aid."[62]

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[61] *Journal,* vol. i, p. 462. May 14, 1738.

In religion it is not the abundance of knowledge which distinguishes one, but the measure of faith. So it is in science. "The man who has studied science does not *know* so very much more than the man who has not, but he has a great deal more faith. The unscientific man is credulous because of lack of faith."[63]

Religion brings men in direct contact with Reality. And this is what Wesley was seeking. He had an intense longing to experience religion, that is, Reality; or, in simple language, God. He knew that logical demonstration could not help him. Real religion runs too deeply for that. Faith he was confident could. But, as yet, he lacked that vital faith. So he was miserable. His nature craved conscious harmony with God. He was fully persuaded that such harmony was possible for him. The trouble must be with himself. His attitude was exactly that of the scientist. The scientist says:

> We hold fast to our demand that even the greatest apparent confusion must sooner or later

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[62] John Theodore Merz: *A History of European Thought in the Nineteenth Century,* vol. iv, p. 789. London, 1914.

[63] Edwin E. Slosson: *Sermons of a Chemist,* p. 84.

> solve itself in transparent formulas. We begin the work ever afresh; and, refusing to believe that nature will permanently withhold the reward of our exertions, think, rather, that we have hitherto only failed to push them in the right direction. And all this pertinacity flows from a conviction that we *have no* right to renounce the fulfillment of our task. What, in short, sustains the courage of investigators is the force of an ethical ideal.[64]

James' comment on this passage is:

> This is a true account of the spirit of science. Does it essentially differ from the spirit of religion? And is anyone entitled to say in advance that, while the one form of faith shall be crowned with success, the other is certainly doomed to fail.[65]

The spirit of science and the spirit of religion are essentially the same. Wesley in his search for a vital experience of God was searching in the spirit of science. And the attitude of the real man of science is practically that of Wesley. As Huxley put it:

> Science seems to me to teach in the highest and strongest manner the great truth which is embodied in the Christian conception of entire

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[64] C. Sigwart: *Logik,* bd. ii, p. 23. Quoted by William James, *The Will to Believe,* p. 120. Longmans, Green & Co.

[65] William James: *The Will to Believe,* p. 120. New York, 1898. Longmans, Green & Co.

> surrender to the will of God. Sit down before the fact as a little child, be prepared to give up every preconceived notion, follow humbly wherever and to whatever abyss Nature leads, or you will learn nothing. I have only begun to learn content and peace of mind since I have resolved at all risks to do this.

And both the spirit of science and that of religion finally depend, not so much upon a formal intellectual process as upon faith. Let us quote again our modern leader of science, a chemist; and the chemist, as we have seen, seemed especially appreciated by Wesley; for he considered that "the moderns have penetrated farther into the recesses of nature than the ancients, considering the advantages they have received, from the art of chemistry."[66] Our chemist claims that the great postulates of science are based upon faith:

> You must distinguish between faith and belief. A great deal of trouble has come from confusing the two. Faith involves action, and it is a part of life, belief is a purely intellectual process of much less importance. It is not even necessary that they coincide. In science we put faith in many things that we don't believe. We don't believe that two parallel lines meet, we don't believe that a circle is made up of a lot of straight lines, we don't believe in the square root of minus

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[66] *Survey,* Preface, p. xv.

> one, we don't believe that space is curved, we don't believe that the ether is harder than steel and softer than air. But we have implicit faith in all of these because by using them we are able to carry out our calculations. It is only by the use of incredible assumptions like these that the paths of the planets can be calculated, or that dynamos be built, or the strength of bridges be determined.[67]

The scientist is enabled because of his implicit faith in these incredible assumptions to reach correct, workable conclusions. They are justified by their works; they are known by their fruits. This is precisely what Wesley was doing when his mental agony reached its height.

Monday, Tuesday, and Wednesday, May 22, 23, 24, 1738, Wesley says he "had continual sorrow and heaviness in my heart." Wednesday his search for God was rewarded. His own words are:

> In the evening I went very unwillingly to a society in Aldersgate Street, where one was reading Luther's preface to the *Epistle to the Romans.* About a quarter before nine, while he was describing the change which God works in the heart through faith in Christ, I felt my heart strangely warmed. I felt I did trust in Christ, Christ alone

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[67] Edwin E. Slosson: *Sermons of a Chemist,* p. 85f. New York, 1925.

> for salvation; as an assurance was given me that he had taken away *my* sins, even *mine,* and saved me from the law of sin and death.[68]

In these lines we have the description of a spiritual mystery at which some of those who have never had such an experience are inclined to scoff, but which has transformed the lives of the most powerful intellects and has established epochs in history. Even such a philosophical and unsentimental historian as Lecky, after stating what he considers the strength and weaknesses of the Methodist movement and of Wesley, places himself on record with the following mature judgment:

> It is, however, scarcely an exaggeration to say that the scene which took place at that humble meeting in Aldersgate Street forms an epoch in English history. The conviction which there flashed upon one of the most powerful and most active intellects in England, is the true source of English Methodism."[69]

From 1725 to 1738, thirteen years, Wesley was seeking the experience he attained in the meeting in Aldersgate Street. It was not an intellectual demonstration; it was a living experience. And because it was an experience no one can understand it by verbal communication. So Wesley introduces his story with the comment: "Let him that cannot receive it ask of the Father of lights that he would give more light to him and to me."

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[68] *Journal,* vol. i, 475f. May 19, 1738.

[69] W. E. H. Lecky: *A History of England in the Eighteenth Century,* vol. ii, p. 607. New York, 1891. Reprinted by permission of D. Appleton and Company.

Now, let us turn to a similar experience in the realm of science, and we shall see that, psychologically, the process is the same. Here is Sir William Rowan Hamilton's account of the discovery of Quaternions. It is taken from the postscript of a letter written to P. G. Tait:

> P. S.—Tomorrow will be the fifteenth birthday of the Quaternions. They started into life, or light, full grown, on the 16th of October, 1843, as I was walking with Lady Hamilton to Dublin, and came up to Brougham Bridge, which my boys have since called the Quaternion Bridge. That is to say, I then and there felt the galvanic circuit of thought *close;* and the sparks which fell from it were the *fundamental equations between i, j, k; exactly such* as I have used them ever since. I pulled out, on the spot, a pocketbook which still exists, and made an entry, on which, *at the very moment,* I felt that it might be worth my while to spend the labor of at least ten (or it might be fifteen) years to come. But then it is fair to say this was because I felt a *problem* to have been at the moment *solved*—an intellectual *want relieved,*

which had haunted me for at least *fifteen* years before.[70]

James was right. The spirit of science and the spirit of religion are essentially the same. Both insist upon faith if the search for Reality is to be rewarded. Wesley searched for thirteen years; Hamilton for at least fifteen years. In neither case could the year, the day, the hour, the place be forgotten. To Wesley the spirit of science and the spirit of religion were essentially the same because the object of both—God—for him was identical. Doctor Slosson says: "If faith in the laws of the material world and the laws, less known but no less real, that govern the activities of human beings, is not faith in God, then I don't know what it is. For the natural laws that we are so proud of and which some men worship, are, after all, creatures of our own imaginations, more or less crude representations of what we see and hear. Our textbooks are but foggy photographs of the acts of God, taken by the pinhole camera of the mind of man."[71]

Again the attitude of our chemist and that of Wesley are about the same. Wesley was sure of his position after his experience in Aldersgate Street on that fateful Wednesday night. Henceforth he warned men to save themselves by faith in Jesus Christ. Our chemist says that when he was teaching chemistry he did not care whether the students *believed* in the atomic theory or not. "All I tried to do was to teach them to *use* the atomic theory, and to realize that if they did not they might get blown up."[72]

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[70] Robert Percival Graves: *Life of Sir William Rowan Hamilton,* vol. ii, p. 453. London, 1889. W. B. Carpenter: *Mental Physiology,* p. 537. New York, 1874. *North British Review,* vol. xlv, p. 57. 1866.

[71] Edwin E. Slosson: *Sermons of a Chemist,* p. 88.

Wesley's love for men was another reason for his devotion to physical science. This impelling motive convinced him of the need of a work that would give the man of ordinary intelligence access to the results of investigations made up to his time. He says, "I have long desired to see such a compendium of natural philosophy" as would comprise "the heads of whatever is known with any degree of certainty, either in regard to the earth or the heavens." He searched carefully for such a work but was compelled to conclude that it was "a desideratum still; and one that a lover of mankind would rejoice to see even tolerably supplied."[73] That this love for men was an impelling power in urging him to undertake this work will not be questioned by those who know Wesley's words and deeds. In one of his appeals, in which he emphasized love as the great protective and corrective, he concludes: "This love we believe to be the medicine of life, the never-failing remedy for all the evils of a disordered world, for all the miseries and vices of men."[74]

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[72] Edwin E. Slosson: *Sermons of a Chemist,* p. 88.

[73] *Survey,* Preface, p. v.

Now Wesley believed that all men instinctively are seeking happiness. In his comments on the Beatitudes of Christ as found in the Sermon on the Mount, he says:

> "To bless men, to make men happy, was the great business for which our Lord came into the world. And accordingly he here pronounces eight blessings together, annexing them to so many steps in Christianity." And he saw no conflict between the essential nature of man and the revelation in Christ. So he adds: that Christ "knowing that happiness is our common aim, and that an innate instinct continually urges to the pursuit of it, he in the kindliest manner applies to that instinct, and directs it to its proper object."[75]

The study of physical science brought happiness to Wesley. He inferred that it would also bring happiness to men in general. And as he found that the work did serve "to testify to the amazing power, wisdom, and goodness of the great Creator; to warm our hearts, and to fill our mouths with wonder, love, and praise," he felt confident that a compendium of natural science would contribute to the highest happiness of men.

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[74] Wesley: "An Earnest Appeal to Men of Reason and Religion," *Works*, vol. v, p. 5.

[75] Wesley: *Explanatory Notes Upon the New Testament.* Matthew 5. 2.

In the light then of this understanding it should not be surprising to find that the charm of the natural sciences had such a hold upon Wesley. His inherent intellectual curiosity, his genius for religion, and his great love for men, all tended to make the study of physical science of absorbing interest to him. Then experiment is the very life of science. And Wesley held experience, which is personal experiment, to be the very life of religion. Indeed, a religion which was not a living experience he considered hardly a religion at all. His examination of the members of his societies made the meetings a real laboratory, and much more searching and scientific than much that goes on in some of our modern psychological laboratories. Professing to experience religion, Wesley sympathetically but exactingly applied tests that he considered would verify the profession. He was claiming no more than a modern scientist holds: "The Christian experience is verifiable by anyone who cares to try it."[76] These words are very much like those written by Wesley, and with which he prefaced the account of his experience at the meeting in Aldersgate Street: "Let him that cannot receive it ask of the Father of Lights that he would give more light to him and to me."[77] In the scientific world, we cannot be satisfied with quoting authorities; for we are told that we must "go into the laboratory and try it for yourself." So in the Christian religion, we cannot be satisfied with quoting authorities, even if one of them be the Bible; we must use the laboratory method, that of personal experience, as did John Wesley.

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[76] Edwin E. Slosson: *Sermons of a Chemist*, p. 68

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[77] Wesley: *Journal,* vol. i, p. 465.

CHAPTER II

WESLEY'S CONCEPTION OF THE FIELD OF PHYSICAL SCIENCE

NATURAL philosophy as understood by Wesley was not identical with our understanding of the term "physical science." So it is not quite accurate to give the impression that Wesley's *Survey of the Wisdom of God in the Creation:* or, *A Compendium of Natural Philosophy* includes only the field of physical science. He definitely describes the scope of the work, and what he understands natural philosophy to include, by stating that *"Natural Philosophy* treats both of God himself and of his creatures, visible and invisible."[1] Nor was Wesley alone in his day in so understanding the scope of natural philosophy. Until the advent of Sir Isaac Newton the fields of philosophy and physical science were not distinguished.

As for pre-Newtonian science, it is one and the same movement with pre-Newtonian philosophy, both in England and on the Continent; science was simply natural philosophy, and the influential figures of the period were both the greatest philosophers and the greatest scientists. It is largely due to Newton himself that a real distinction came to be made between the two.[2]

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[1] *Survey,* Introduction.

Yet Newton himself was far from disassociating the fields of science and philosophy. In one of the greatest of his scientific treatises he works out its principles until he reaches the First Cause, where he concludes:

> Now by the help of these Principles all material things seem to have been composed of the hard and solid particles above mentioned, and variously associated in the first creation by the counsel of an intellegent Agent. For it became Him who created them to set them in order. And if he did so, it's unphilosophical to seek for any other origin of the world, or to pretend that it might arise out of chaos by the mere laws of nature; though, being once formed, it may continue by those laws for many ages.[3]

Nor does Newton hesitate to devote the closing pages of the second edition of his *Mathematical Principles of Natural Philosophy,* generally known as his *Principia,* to an eloquent discussion of the nature of the First Cause, while insisting that natural phenomena can only be interpreted rightly in terms of mathematical mechanics, and that the results must be physically verified. This is the more significant when we remember that this work more than any other has dominated the method of physical science from its publication to the present. As has been said: "There has been, as yet, but one Newton; there have not been very many Keplers."[4] His influence is immeasurable in our day, but to his contemporaries his was the last word in physical science. Now, Newton, in slightly different terminology, said, "Natural philosophy treats both of God himself and of his creatures, visible and invisible." For he closes his monumental work, the *Principia,* with a discussion of the movements of the heavenly bodies; and he passes immediately by the sheer force of inevitable logic to the inference:

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[2] Edwin Arthur Burtt: *The Metaphysical Foundations of Modern Physical Science,* p. 17. New York, 1925. Reprinted by permission of Harcourt, Brace and Company, Inc.

[3] Sir Isaac Newton: *Opticks,* p. 378. London, 1718.

> This most beautiful system of the sun, planets and comets, could only proceed from the counsel and dominion of an intelligent and powerful Being. And if the fixed stars are the centers of like systems, these being formed by the like wise counsel, must be all subject to the domination of One; especially since the light of the fixed stars is of the same nature with the light of the sun, and from every system light passes into all the

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[4] J. Arthur Thomson: *Introduction to Science,* p. 75. Reprinted by permission of Henry Holt and Company.

other systems. And lest the system of the fixed stars should, by their gravity, fall on each other mutually, he hath placed those systems at immense distances from one another.

He proceeds to show, in reason as profound as his diction is simple and eloquent, what must be the nature of this One, mathematical mechanics being what they are seen to be in this work. And he finally concludes: "And thus much concerning God; to discourse of whom from appearances of things, does certainly belong to natural philosophy."[5]

It is evident by this time that Wesley had ample justification for his definition: "Natural Philosophy treats both of God himself, and of his creatures, visible and invisible." Nevertheless, he had a very clear conception of the respective functions of the fields of philosophy and science; and while there are many philosophical and theological reflections scattered throughout the work, he claims to have tried to hold himself strictly to the limitations that physical science imposes upon him:

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[5] Sir Isaac Newton: *Mathematical Principles,* vol. ii, pp. 388-392. These words are from the famous Scholium which Newton added to the second edition of the *Principia,* of which it is generally agreed that "In the entire history of science no single contribution of any man has been so important as this" (*New International Encyclopædia,* vol. 17, p. 65).

> It will be easily observed that I endeavor throughout not to *account* for things; but only to *describe* them. [Italics are Wesley's.] I undertake barely to set down what appears in nature, not the cause of those appearances. The facts lie within the reach of our senses and understanding: the causes are more remote. That things are so, we know with certainty: but why they are so, we know not. Many cases we cannot know; and the more we inquire, the more we are perplexed and entangled.[6]

And Wesley does not violate his endeavor to hold himself to description. He never in this work solves a scientific problem by giving the cause as the direct agency of God. He does, as Newton, when seeking ultimate cause, find it in God. But when discussing things scientifically, if he cannot give a secondary cause he gives none; and he is not at all backward in admitting his ignorance. And he does just this again and again. We find him often saying this: "It is better to admit our ignorance," and, again, "it is of no use to indulge mere conjecture, where knowledge is unattainable."

Now, what strikes the thoughtful student is the modern manner in which Wesley draws the distinction. He states definitely that the province of science is description; explanation, or the accounting for things, is the province of philosophy. The failure to distinguish the respective fields of science and philosophy was the real source of the materialism which infested so much of the science of the nineteenth century. Just here Professor Karl Pearson has rendered a great service, and that in spite of the fact that he claimed that "to draw a distinction between the scientific and philosophical fields is obscurantism."[7] Pearson realized that "the crude materialism of the older physicists" was due to a lack of understanding of their basal principles and postulates. So he undertook "a criticism of the fundamental concepts of modern science"; and his conclusion was, that "all science is description and not explanation, that the mystery of change in the inorganic world is just as great and just as omnipresent as in the organic world, are statements which will appear as platitudes to the next generation."[8] Only twelve years later, in his preface to the third edition, 1911, Professor Pearson could, with full assurance, say: "Nobody believes now that science explains anything; we all look upon it as a shorthand description, as an economy of thought."

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[6] *Survey,* Preface, p. v.

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[7] Karl Pearson: *The Grammar of Science.* Third Edition, Revised and Enlarged, Preface, 1892. London, 1911.

[8] *Ibid.,* Preface to the Second Edition, 1899.

Pearson first issued his *Grammar of Science* in 1892, in which he viewed science as a "description of the universe." In the second edition, in 1899, he said "that all science is description and not explanation." In 1911 he could say, "Nobody believes now that science *explains* anything." But one hundred and twenty-nine years before the first edition of the *Grammar of Science* appeared John Wesley drew this distinction between the fields of science and philosophy. And Wesley knew what he was doing; whereas Pearson drew the distinction, and then said, "To draw a distinction between the scientific and philosophical fields is obscurantism." It would be difficult, however, to find a more obscure discussion than Pearson's section on "science and metaphysics." He speaks of one of his scientific friends "ever trying to keep the author's scientific radicalism within moderate and reasonable bounds." It is a pity the friend did not succeed in this particular. In saying that science is description, not explanation, and in making science cover all fields, he leaves no method of seeking explanation. This is absurd. Men are always seeking explanation. If we had only the several sciences, there would be no unity; and without unity, we would never reach reality. Thomson admits that "it is true that science only gets at fractions of reality."[9] But we all assume that we are in a universe. And the human mind cannot be satisfied with the results of the particular sciences. After they have done their best there remains a compelling question. "This is the question of meaning and causal interpretation." And this question only philosophy can attempt to answer. "Science discovers, describes, registers the facts; philosophy interprets them."[10] These are the words of a philosopher; and the words of a leading scientist are identical in meaning: "The aim of Science is description of facts, the aim of philosophy their interpretation." And he goes on to say: "There is much need for a critical metaphysics to function as a sublime logic, testing the completeness and consistency of scientific descriptions, whether of things as they are or of the way in which they have come to be."[11]

Paulsen states the matter with great clearness: "To speak figuratively, reality is a great riddle put to the human mind. Each of the separate sciences offers data for determining the answer. Philosophy is the attempt to solve the riddle, to find the key to the *mysterium magnum.*"[12]

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[9] J. Arthur Thomson: *Introduction to Science*, p. 137.

[10] B. P. Bowne: *Personalism*, p. 41. Reprinted by permission of Houghton Mifflin Company.

[11] J. Arthur Thomson: *Introduction to Science*, p. 164. Reprinted by permission of Henry Holt and Company.

None of this would have been news to Wesley. He saw clearly, as we have seen in the quotation above, taken from the first preface to his *Survey,* that science is description, philosophy is interpretation. He knew the difference between the province of science, which is to describe phenomena and their laws, and that of philosophy, which is "to account for the cause of those appearances." And notwithstanding the fact that Wesley's chief work was preaching, and that God and all things bearing upon religion were uppermost in his mind, metaphysics seldom commanded his attention. Experience with something concrete and particular in nature or human nature always commanded his full attention. This is very evident in his review of natural philosophy from its beginning in antiquity to his own time as we find it in the Introduction of his *Survey:*

> The most ancient nations, the Egyptians and the Hebrews in particular, philosophized concerning God and concerning Genii, good or evil spirits, of an order superior to man. What they taught concerning the visible world, related

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[12] Friedrich Paulsen: *Introduction to Philosophy* p. 19. New York, 1906. Reprinted by permission of Henry Holt and Company.

> chiefly to its origin, the changes it was to undergo, and its final dissolution.

He, apparently, did not think highly of the results; for he comments: "But on all these heads they only delivered to their posterity what they had received from their forefathers."

With the Greeks a real advance came:

> Among the Greeks, Thales Milesius and his followers, applied themselves, with great industry, to discover, with the best help they had, the material causes of natural things. They were succeeded by others, who more curiously searched into the structure of natural bodies. Here the foundation of natural history was laid, in various observations on plants, animals, and other things. And herein the endeavors of Aristotle, and Theophrastus in particular, are to be commended.

Wesley, however, had somewhat against Aristotle. He mixed metaphysics with natural science, which was an unpardonable sin with Wesley. This is what he has to say:

> Yet in other respects, Aristotle did not promote, but, rather, obstructed the knowledge of nature: for he made philosophy as unintelligible, by his abstract and metaphysical notions, as Plato, Pythagoras, and others did by their ideas, numbers, and symbols.

He passes to later Greek thought:

> In succeeding times, when the four Greek sects, the Platonic, Peripatetic, Epicurean, and Stoic divided the Western world between them, the Platonists confined themselves and their opinions to the subject of divinity, the Peripatetics regarded little but logic, the Stoics little but moral philosophy, and the Epicureans had small concern about any, being immersed in sensual pleasures; so that none of them made any considerable improvement in any branch of natural philosophy.

And his summary of the Middle Ages is:

> When the utter barbarism which followed, was a little dispelled, Aristotle began to reign. His followers (the schoolmen, as they were called) might have improved natural philosophy, if (like their master) they had diligently cultivated the knowledge of nature, and searched out the properties of particular things. But it was their misfortune, to neglect what was commendable in him, and to follow only what was blameworthy; so as to obscure and pollute all philosophy, with abstract, vain speculations. Yet some of them, after the Arabians had introduced the knowledge of chemistry into Europe, were wise above the age they lived in; and penetrated so far into the secret recesses of nature, as scarcely to escape the suspicion of magic. Such were Roger Bacon and Albertus Magnus.

This appraisal of these periods is just. The deficiency, he found, was in the failure to follow the method of natural science. "This is the method of trial and error to one small fragment of things, for that is the whole essence of the method, it is a response to a special situation."[13] Observation and experiment were used, but rather haphazardly. What Wesley deplored was that the schoolmen neglected what he considered good in Aristotle—his study of nature; and followed him in what he considered unprofitable—his metaphysical method, with the result that they "obscured all philosophy with abstract, idle, vain speculations."

This brings him to the modern period. And Francis Bacon is the leader, bringing in science as it is known to-day.

Bacon, says Wesley, "well understanding the defects of the school-philosophy, incited all lovers of natural philosophy to diligently search into natural history. And he himself led the way, by many experiments and observations." Professor Millikan agrees with Wesley in distinguishing the modern period from the ancient and mediæval periods by the method of experiment and observation. He says that Galileo, a contemporary of Bacon, differed from his predecessors, as far as Doctor Millikan knew, by applying the scientific method with an intensity altogether unknown in his day.[14] "After this," Wesley seems happy to say, "not single persons only, but whole societies applied themselves carefully to make experiments; that having accurately observed the structure and properties of each body, they might the more safely judge of its nature." He enumerates some of the great things which the moderns have discovered by this method. He mentions how the use of the microscopes has helped the moderns to make discoveries "which eluded all the art and industry of the ancients." But he considers chemistry the foremost science, because it has been cultivated "with far greater accuracy," thus causing the moderns to penetrate "further into the recesses of nature than the ancients." And "the most extraordinary and important discoveries and improvements which have been made in later ages, which have enriched the world with useful knowledge, and exalted the modern, to a conspicuous degree of pre-eminence over the ancient philosophy; which have ushered in a new dawn to the scientific world, and substituted rational theories for obscure dogmas; are unquestionably those in the chemical department of philosophy."[15]

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[13] A. D. Ritchie, *Scientific Method,* p. 6.

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[14] See Robert Andrews Millikan: *Evolution in Science and Religion*, p. 37. New Haven, 1927.

[15] *Survey*, Introduction, pp. xii-xv.

CHAPTER III

WESLEY'S SURVEY OF THE FIELD OF PHYSICAL SCIENCE

JOHN WESLEY'S interest in physical science manifests itself in almost all of the works which he published. This is true, even in some of his sermons; but the title of the work that he devoted entirely to the subject is *A Survey of the Wisdom of God in the Creation: or a Compendium of Natural Philosophy.* The first edition appeared in 1763, and it gradually grew for the next fourteen years. It cannot be stated with exactness how long Wesley was in writing and revising the work, but we know that he first mentions it in his *Journal,* Monday, December 11, 1758, where he says, "Most of the week I spent in preparing materials for *A Survey of the Wisdom of God in the Creation;* or, a full, plain, and correct system of Natural Philosophy."[1] From 1758 to the publishing of the fourth edition—the last issued before Wesley's death, which occurred five years later—covers a period of at least twenty-six years; or, if we count from the first mention of his working on it to his last revision, he spent at least nineteen years "as," he says, "my leisure and abilities permitted." The three editions by Wesley are as follows:

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[1] *Journal,* vol. iv, p. 295. December 11, 1758.

A Survey of the Wisdom of God in the Creation: or, A Compendium of Natural Philosophy. In Two Volumes. By John Wesley, A.M.

These are thy glorious works, Parent of Good,
Almighty! Thine this universal Frame,
Thus wond'rous fair! Thyself how wond'rous then! —Milton.

Bristol: Printed by William Pine. 1763.
12mo, pp. 286, 256, xxx.

There have been many incorrect statements about this work. One writer speaks of it as "the work by Bonnet, which he [Wesley] edited and circulated under the title, *A Survey of the Wisdom of God in the Creation;* or *A Compendium of Natural Philosophy.*" This statement is far from the truth; for, as a matter of fact, Bonnet is quoted only once in this first edition of the work, where Wesley refers to Bonnet's experiments with plants. And the reference is not to Bonnet's *Contemplation de la Nature;* for that was not published until 1764, whereas the first edition of Wesley's work was issued the year previous. Wesley, after saying that he follows Mr. Derham in dividing the work into text and notes, states frankly and definitely what text he is translating:

> The text is in great measure translated from the *Latin* work of *John Francis Buddoeus,* the late celebrated professor of philosophy in the University of *Jena* in *Germany.* But I have found occasion to retrench, enlarge, or alter every chapter, and almost every section, so that it is now, I believe, not only pure, containing nothing false or uncertain, but as full as any tract can be expected to be, which is comprised in so narrow a compass; and likewise *plain,* clear, intelligible, to one of tolerable understanding. The notes contain the sum of what is most valuable in the above named writers; to which are added the choicest discoveries both of our own and of the foreign societies. These likewise, I trust, are as plain and clear as the nature of the things spoken will allow; although some of them, I know, will not be understood by an unlearned or inattentive reader.

By "the above named writers," Wesley means the four authors whose works came nearest to such a compendium as he desired, namely, Mr. Ray's *Wisdom of God in the Creation;* Doctor Derham's *Physico and Astro-Theology;* Niewentyt's *Religious Philosopher;* Mather's *Christian Philosopher,* and *Nature Delineated.*

In his abridgement of Bonnet's *Contempla-*

tion de la Nature, Wesley rigorously follows the principle adopted with the other writers, namely, that when he "found occasion to retrench, enlarge, or alter," he did so. Yet he is remarkably faithful in his translation of the French into English. It is not always a literal translation. Wesley was too good a scholar to hold that a literal translation is always a faithful rendering of the original. He knows how to give the French idioms their English equivalents. There are 545 pages of *Contemplation de la Nature.* Wesley requires only 225 pages for his abridgement. Yet he has not only retrenched, but he has enlarged and altered. It is true that while his pages are smaller the type is smaller, and there is not much difference between the French and the English pages, the latter generally containing a few more words. So there is not a little of Wesley in this abridgement. And nothing could be further from the facts than to say, as we have noted one writer as saying, that Wesley's treatise "is the work by Bonnet, which he [Wesley] edited and circulated under the title, 'A Survey of the Wisdom of God in the Creation: or, A Compendium of Natural Philosophy.'" On the other hand, Wesley makes Bonnet's Conclusion to his treatise also the Conclusion to Part Four of his own work.

Seven years later the second edition appeared, entitled:

A Survey of the Wisdom of God in the Creation: or, *A Compendium of Natural Philosophy.* In Three Volumes. The Second Edition. Bristol: Printed by William Pine. 1770. 12mo, pp. 286, xxx, 256, 242. x. iv.

The first two volumes are a reprint of the first edition without any change except the correction of errors. Volume three is entirely new. The great success of the first edition was quite unexpected, and it encouraged Wesley to write the third volume, which is largely notes on the topics treated in the other two volumes.

Seven years later the third edition finally appeared under the following title:

A Survey of the Wisdom of God in the Creation: or, *A Compendium of Natural Philosophy.* In Five Volumes. The Third Edition, enlarged. By John Wesley, A. M. London: Printed by J. Fry and Co., in Queen Street, and sold at the Foundry, Upper Moorfields, and by the Booksellers in Town and Country. 1777. 12mo, pp. 369, 335, 369, 348, 331.

The fourth volume contains much additional matter, with which it was his intention to close the work. But in preparing the materials for his work he had examined Charles

Bonnet's *Contemplation de la Nature,* the first edition of which appeared in 1764–65. He became so enamored with "the scale of beings," and "the gradual progression of beings," of Bonnet, who first used the term "evolution" in biology, that he was not satisfied to make extracts in the body of his *Survey,* but abridged the whole, making it the whole of volume four, except the first fifty pages. In the *Survey* proper, before we reach the abridgement of Bonnet's work, the idea of "the scale of beings" is in evidence, and Wesley wonders, as he observes, "by what a gradual progression the world of life advances, through an immense variety of species, before a creature is found that is complete in all its senses." And he sees that "the whole progress of nature is so gradual, that the entire chasm from a plant to man is filled up with divers kinds of creatures, rising one above another, by so gentle an ascent that the transitions from one species to another are almost insensible."[2] But we will let Wesley tell the story of why he abridged Bonnet's *Contemplation of Nature:*

> This reflection upon the scale of beings, is pursued at large by one of the finest writers of the age, Mr. Bonnet of Geneva, in that beautiful work, *The Contemplation of Nature.* When I first

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[2] *Survey,* vol. ii, p. 185.

> read this, I designed to make only some extracts from it, to be inserted under their proper heads. But upon further consideration, I judged it would be more agreeable, as well as profitable to the reader, to give an abridgement of the whole, that the admirable chain of reasoning may be preserved, and the adorable wisdom and goodness of the great Author of nature, placed in the strongest light.[3]

Once again Wesley thought he was to bring his work to its close. He begins his conclusion:

> Here I set my design. I have presented my readers with a variety of facts of an interesting nature, sufficient to enable them to form an idea of those pleasures which result from the contemplation of nature.

But he could not restrain the momentum of his insatiable intellectual curiosity, or the urge to convey the results to others for their pleasure and happiness. So when unexpectedly he discovered Mr. Deuten's "Inquiry into the origin of the discoveries attributed to the moderns," he must take "the opportunity of inserting here another extract from one of the most ingenious treatises, which, I believe, was ever wrote upon the subject." Ingenious, certainly, but very farfetched. We agree with

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[3] *Ibid.*, p. 186.

Wesley's intimate friend, Dr. John Whitehead, in his comment on Wesley's extravagant praise of Deuten's work: "I am astonished that Mr. Wesley could think Mr. Deuten's reasonings and deductions from many passages of the ancients, are at all admissible."[4] Much of it is inconsistent with what Wesley says in his *Survey;* and in his intemperate praise of Deuten's work he violates his own principle "that to revive it was the same as to invent it," as the knowledge of it was entirely lost. As Whitehead says, the *Survey* would not have suffered if this had been omitted.

There is something in this closing volume, however, that is valuable, and that is Wesley's Appendix, in which he discusses "the bounds and extent of human understanding." And he does it "chiefly on the plan of the pious and learned Doctor Peter Brown, late Bishop of Cork, in Ireland." It is in fact Wesley's theory of knowledge, and will be especially useful in understanding Wesley's attitude toward and interpretation of the Scriptures.

Wesley stated very clearly his reasons for making a survey of the field of physical science. Works were not lacking on the subject in the eighteenth century, but none of them suited Wesley's purpose. In his own words: "None of these, singly, answers the design." They were either too technical, or too elaborately worked out, or too expensive for the "plain man" of "tolerable understanding." In addition he had another end in view, indeed, the one that always with him overshadowed all others. He states it as follows:

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[4] John Whitehead: *Life of John Wesley, With Life of Charles Wesley,* vol. ii, p. 302. Philadelphia, 1845.

> I wished to see this short, full, plain account of the visible creation, directed to its right end: not barely to entertain an idle, barren curiosity; but to display the invisible things of God, his power, wisdom and goodness.[5]

So in the very beginning of this work Wesley very plainly states that his main motive is religious. And this is what those who are acquainted with Wesley should expect. He was a religious genius; so the things of religion always had first place with him. This must not be interpreted, however, as antagonism on the part of Wesley toward physical science or aversion to scientists as such, for he was a devout student of physical science, and he admired scientists. He was as sure as was the apostle Paul that "the invisible things of him since the creation of the world are clearly seen, being perceived through the things that are made, even his everlasting power and divinity."[6]

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[5] Wesley: *Survey of the Wisdom of God in the Creation*, Preface, p. iv.

We have seen that the main purpose of the *Survey* was "to display the invisible things of God"; and we find Wesley declaring that "the whole universe is a picture, in which are displayed the perfections of the Deity. It shows not only his existence, but his unity, his power, his wisdom, his independence, his goodness."[7] And Wesley could not have found words that better expressed his basic and settled attitude toward the physical universe, and his purpose in producing this work, than the quotation which he placed on the title page of every edition:

> These are thy glorious works, Parent of Good,
> Almighty! Thine this universal Frame,
> Thus wond'rous fair! Thyself how wond'rous then!

These lines from Milton's *Paradise Lost* expressed for Wesley the invincible truth that the creation is a unity of surpassing beauty which pointed to its invisible Author as the source of all power, goodness, and beauty.

And he is so far from having anything like an aversion to the physical scientists that he actually considers them to be called to a ministry, the same in kind, though different in method, as that of prophets, apostles, and evangelists. The following words of this warm-hearted and clear-headed man can be counted upon to thrill the devout student of nature:

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[6] *Epistle to the Romans,* 1. 20.
[7] *Survey,* vol. i, p. 368.

> He [God] does not impart to us the knowledge of himself immediately; that is not the plan he has chosen; but he has commanded the heavens and the earth to proclaim his existence, to make him known to us. He has endued us with faculties susceptible of this divine language, and has raised up men who explore their beauties, and become their interpreters.[8]

These words of Wesley are very much like those of Oliver Wendell Holmes spoken before the Phi Beta Kappa Society at Harvard University, June 29, 1870:

> The attitude of modern Science is erect, her aspect serene, her determination inexorable, her onward movement unflinching, because she believes herself, in the order of Providence, the true successor of the men of old who brought down the light of heaven to men.[9]

The scientists, then, for Wesley as for Holmes, were the interpreters of the will of

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[8] *Survey,* vol. ii, p. 342.

[9] Oliver Wendell Holmes: *Mechanism in Thought and Morals.*

God as it is revealed in nature—those who help us to understand the "divine language" in which the heavens and the earth speak to men. The visible creation is a revelation of the perfection and the goodness of God. "Every being is endued with a perfection suited to the ends of its creation." If we descend to the depths of the ocean "we shall find there also the most exquisite contrivance, acting in concert with the most profuse goodness." And he concludes that the language of the revelation found in the book of nature is, if not a better, at least, is more easily understood by men than any written revelation:

> In short, the world around us is the mighty volume wherein God hath declared himself. Human languages and characters are different in different nations. And those of one nation are not understood by the rest. But the book of nature is written in an universal character, which every man may read in his own language. It consists not of words, but things which picture out the divine perfections.[10]

He, however, found no difficulty in accepting both the book of nature and the Bible; rather the former strengthened his belief in the latter. Reviewing his experience in making the *Survey* he says, "I was strengthened in the belief of the holy word, which had so great congruity with these truths."[11]

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[10] *Survey,* vol. i, p. 308.

And in his study of nature Wesley found that she works for the happiness of man. This is seen throughout the work; but we quote one passage wherein it is shown that nature so arranges even death that it seldom interferes with the happiness of man:

> The greatest number of mankind die, therefore, without sensation: and of those few that still preserve their faculties to the last moment, there is scarcely one that does not also preserve the hopes of still outliving his disorder. Nature, for the happiness of man, has rendered this sentiment stronger than his reason.[12]

Here he also finds that nature brings the same truth to men that Jesus Christ did:

> To bless men, to make men happy, was the great business for which our Lord came into the world. And, accordingly, he pronounces eight blessings together, annexing them to so many steps in Christianity. Knowing that happiness is our common aim, and that an innate instinct continually urges us to the pursuit of it, he in the kindest manner applies to that instinct, and directs it to its proper object.[13]

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[11] *Survey,* vol. ii, p. 463.

[12] *Ibid.,* vol. i, p. 107.

[13] *Explanatory Notes Upon the New Testament,* Matthew 5. 2.

Wesley claims that the whole creation is good, and we would get good out of it continually if we would learn wisdom from Christ:

> And thus instructed in the philosophy of our heavenly Master, we will learn a lesson of faith and cheerfulness from every bird of the air, and every flower of the field.[14]

In short, Wesley wrote this survey of the physical science of his day in order that he might help men to see the power, wisdom, and goodness of God, and to increase their happiness.

Wesley has been thoroughly honest throughout this work. He informs us of his sources. As we have previously quoted him: "The text is in great measure translated from the Latin work of John Francis Buddoeus, the late professor of philosophy, in the university of Jena, in Germany. But I found occasion to retrench, enlarge, or alter every chapter, and almost every section." And in his preface to the 1775 edition he states, "I have consulted abundance of authors, and taken abundance of passages from them."

In our day, accustomed, as we are, on opening a book, to face such a warning as "This work is copyrighted; the publication of any portion is strictly prohibited," some might question the moral right of Wesley to make a survey of the physical science of his day by gathering his materials from others. Literature in Wesley's day had not yet become the lucrative calling it since has attained. No one questioned the right. Copyright had some standing in common law, but it was practically never appealed to. In England, the first copyright law placed upon the statute books was in the reign of Anne, in 1709. It was, however, many years before copyright became a vital thing in practice.[15]

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[14] *Explanatory Notes Upon the New Testament,* Matthew 6. 32.

Wesley had a perfect passion for abridging what he considered treatises that conveyed useful knowledge. He had an inordinate love of knowledge, and second only to this was his desire to pass it on to others. Money never entered into his mind in this matter. Some of these productions he actually lost money on. It is true that the sale of the output of his pen was so large that he did receive a good income from it. He, however, gave it all away. His main purpose—and, we think, his only purpose—was to do good. And when he found a good book he abridged it for his people. To be sure, he knew how to write treatises of his own. He issued three hundred and forty-one publications; two hundred and thirty-three were original, and one hundred and eighteen were abridgements.[16]

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[15] Fred W. Maitland and Francis C. Montague: *A Sketch of English Legal History*. Edited by James F. Cole. p. 153. New York, 1915. Reprinted by permission of G. P. Putnam's Sons, publishers, New York and London.

Then Wesley had something like a horror of large books. Perhaps he was shrewd enough to know that generally large works are for most folks ornamental, or at best, used for reference. Everything he wrote had a practical end in view; and he knew that those to whom he appealed had neither much money nor much time to spend upon bulky books. He seemed to enjoy quoting the saying of the librarian of the Alexandrian Library in the middle of the third century before Christ, Callimachus: *μέγα βιβλίον μέγα κακόν*—"a hugh book is a hugh evil." And he often said to his friend, Henry Moore: "Ah, Henry, if angels were authors, we should have but few folios."[17] This impatience with bulky volumes sometimes, we think, made him somewhat uncharitable.

> I abridged Doctor Watts's pretty *Treatise on the Passions*. His hundred and seventy-seven pages will make a useful tract of four-and-twenty. Why do persons who treat the same subjects with me, write so much larger books? Of many reasons, is not this the chief—we do not write with

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[16] W. H. Meredith: *The Real John Wesley*, p. 351.

[17] *Ibid.*, p. 364.

the same view? Their *principal end* is to get money; my *only one* to do good.[18]

Such an ungenerous judgment is very unusual in Wesley. The explanation seems to be that his strong aversion to anything like a verbose volume caused him to lose for the time being his usual charitable spirit.

Some, who have seemed to fear that the cordial attitude which Wesley had toward physical science is a little dangerous, have suggested that the *Survey* does not express his own opinions but simply those of the authors he was following. There are a number of reasons why this suggestion cannot command our assent.

Those who have only a moderate acquaintance with Wesley know, as Overton says, that no matter what the subject may be "he always has some practical end in view, and in almost every case we can trace the reason of his writing what he did in the particular circumstances which were at that particular time before him."[19] And the practical end always included his supreme purpose, as we have just quoted him, that his only end in writing was "to do good." His own testimony and that of those who have studied his life make it clear that he wrote nothing that he did not approve.

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[18] *Journal,* vol. v, p. 300. February 17, 1769.

[19] J. H. Overton: *John Wesley,* p. 169. Boston, 1891.

Then we have his own words as to whether the *Survey* expresses his personal attitude. He has much praise for Goldsmith's *History of the Earth and Animated Nature,* but he has also some objections, among which is that he doubts the truth of some things in it. He says, "I doubt, some parts of it are not true." And he says of his own *Survey:*

> So that it is now, I believe, not only pure, but containing nothing false or uncertain; but as full as any tract can be expected to be, which is comprised in so narrow a compass; and, likewise plain, clear, and intelligible to one of a tolerable understanding.[20]

It should be unmistakable then that what Wesley has put in this survey of the physical science of his age is only that which is approved by him. Anyone who really understands Wesley with his imperious mind will not question this fact. This is even true of his abridgement of Bonnet's *Contemplation of Nature;* Bonnet's "scale of beings," his "gradual progression of beings," and his "evolution" are identical with those of Wesley's. Then to suggest that anything in the *Survey* has not the approval of Wesley is to deny his own words which we have quoted.

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[20] *Survey,* Preface.

CHAPTER IV

THE SCIENTIFIC SPIRIT AS EMBODIED IN WESLEY

THE spirit of anything can be grasped only through sympathy; nor can it otherwise be clearly defined or measured. It must ever remain indefinite. But kindred spirits always understand. So the following efforts of eminent scientists seeking to state what the scientific spirit is will help us enter into the spirit of science.

"The scientific spirit," Saint George Mivart says, "is, above all, an inquiring spirit";[1] Sir Michael Foster holds it to be truthfulness;[2] and J. Arthur Thomson claims that the first characteristic is "a passion for facts."[3] Thomson holds that his "passion for facts" corresponds with Foster's "truthfulness"; and, as a matter of fact, both agree with Mivart's "inquiring spirit." An inquiring spirit is persistently in passionate pursuit of truth. The essential scientific spirit is persistently and passionately pursuing truth, or knowledge; and this is the spirit that dominated Wesley.

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[1] Saint George Mivart: *The Groundwork of Science,* p. 1. Reprinted by permission of G. P. Putnam's Sons, publishers, New York and London.

[2] Quoted by J. Arthur Thomson, *Introduction to Science,* p. 17; Sixty-ninth Report, British Association for the Advancement of Science, p. 16. London, 1900.

[3] J. Arthur Thomson, *Introduction to Science,* p. 34. Reprinted by permission of Henry Holt and Company.

Wesley was a pragmatist. He did not believe in "science for science's sake," or "art for art's sake," or "philosophy for philosophy's sake." He believed that human beings were ends in themselves and everything on earth is for them. He caught the great truth proclaimed by Jesus Christ: "I came that they may have life, and may have it abundantly."[4] Physical science gripped Wesley in addition to its satisfying his intellectual curiosity, because it made human life more abundant. He claimed that the things of the physical world were given to men to satisfy their love of beauty by beholding them, and their love of knowledge by "studiously and diligently searching into them." And to pursue science "he esteemed part of the duty which the wise God of nature requires of the children of men."[5] Thomson says there are risks connected with the hypertrophied scientific spirit, naming that "of ranking science first, and life second (as if science were not, after all, for the evolution of life)."[6] And it was because Wesley had such great appreciation of the value of science for the enlargement of the life of men that he had such passionate love for science, and why he considered that "a lover of mankind would rejoice to see" a compendium of the science of his day "even tolerably supplied."[7] Science, to Wesley, must be of service to men. When a rather harsh and discourteous critic addressed a score of questions to him, one of which took him to task for his interest in science—"Why did you meddle with electricity?"—he answered this insolent question with the utmost calmness, "For the same reason as I published the *Primitive Medicine*—to do as much good as I can."[8] He had an enthusiasm for science which could come only from one who had the real scientific spirit. Again and again we find him closing the description of some experiment with some such phrase as, "What a field does this open!" or, as he exclaims after reading Franklin's letters to Collinson on electricity, "What an amazing scene is here opened for after ages to improve upon!"[9] He would have heartily approved of the following words from one of the best of modern scientists:

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[4] *Gospel of John,* 10. 10. [5] *Survey,* vol. ii, p. 463.

[6] J. Arthur Thomson: *Introduction to Science,* p. 14. Reprinted by permission of Henry Holt and Company.

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[7] *Survey,* Preface.

[8] *Works,* vol. vii, p. 403.

[9] *Journal,* vol. iv, p. 54. February 17, 1753.

> Science, imbued with the spirit of service, which is the essence of religion, and religion guided by the intelligence, the intellectual honesty, the objectiveness, and the effectiveness which is characteristic of the spirit of science, can between them, without a shadow of doubt, in view of the rate at which discoveries are now being brought about, transform the world in a generation.[10]

Wesley would have rejoiced to see the day this could be said "without a shadow of doubt." And it may be said in passing that every quality that Professor Millikan names here as characteristic of the spirit of science Wesley had and prized. He considered "the spirit of service" to be "the essence of religion," and no one has surpassed him in the history of the race in rendering service. He insisted upon religion being based upon reason, claiming that "I am ready to give up every opinion which I cannot by calm, clear reason defend."[11] His intellectual honesty was never seriously questioned as far as our knowledge goes. We have seen that he was so enamored with the objectiveness of physical science that he disregarded metaphysics too much. And as to his effectiveness as a preacher, social reformer, and conserver and advancer of civilization, both contemporaries and historians join in rendering homage. The testimony of one contemporary is well worth quoting just here, as he was a scientist—the discoverer of oxygen, and a clergyman of the Unitarian Church, Joseph Priestley. After telling the Methodists that they, under the leadership of Wesley, who had died just three months previously, surpassed all in redeeming the poor and the depraved, he says, "And to you is the civilization, the industry, the sobriety, of great numbers of the laboring part of the community owing." He adds that it was the neglect on the part of the ministry of the Established Church and of the dissenters "that led Mr. Wesley and his early associates to open this new and extensive field of usefulness, for which thousands will hereafter *rise up and call him blessed.*"[12]

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[10] Robert Andrews Millikan: *Science and Life,* p. 78. Reprinted by permission of Congregational Publishing Society.

[11] *Works,* vol. vi, p. 434.

Professor Millikan is an excellent example of the well-balanced scientist. Some still insist upon a rigid division of the field into pure and applied science. Now, if any can be classed as a pure scientist, Doctor Millikan certainly is that one. He says, "When I look over my thirty years of scientific effort I can find no industry which has grown out of my researches, nor even any which have been very immediately benefited by them."[13] Yet, as we have seen, he is a devotee of the application of the results of science to practical life. Copernicus' theory of the heavens was the result of pure science. Indeed, so much so that, as Wesley said, his "system was very much opposed, and Copernicus himself considered as a wild theorist."[14] It was considered a wild theory, yet, as Doctor Millikan says, "there was not a political or social change in Europe during the two or three succeeding centuries which it did not affect." And while it is true that everything Wesley did seemed to have a practical end in view, "practical" must be taken in a very broad sense. Influencing the thought of men is a very practical work. And who can forecast the results of the most speculative thinking? And, in fact, Wesley was as much interested in pure as in applied science; for the truth is no one can tell just when some idea of the purest scientist will not revolutionize practical life. A distinct line can no more be drawn between pure and applied science than between thinking and doing. And Wesley never drew it.

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[12] Joseph Priestley: *An Address to the Methodists,* June, 1791. Prefixed to Original Letters by John Wesley. Birmingham, 1791.

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[13] Robert Andrews Millikan: *Science and Life,* p. 2. Reprinted by permission of Congregational Publishing Society.

[14] *Survey,* vol. ii, p. 112.

Wesley had a passion for facts. The editor of an American edition of the *Survey* could say that Wesley, "being equally accredited by his friends and his enemies for a rigid adherence to truth and a strict observance of facts," his respect for facts would cause him to surrender the most ingrained prejudice. At one time he held that erroneous views of the Trinity prevented one from being pious. He read the life of Mr. Thomas Firmin, a Unitarian. He was so impressed with the piety of the man that he abridged it for his followers, and in his preface he makes the following confession:

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> I was exceedingly struck at reading the following *Life,* having settled it in my mind that the entertaining wrong notions concerning the Trinity was inconsistent with real piety. But I cannot argue against matter of fact. I dare not deny that Mr. Firmin was a pious man, although his notions of the Trinity were quite erroneous.[15]

Respect for facts caused him to be exceedingly cautious. He writes:

> The surprising facts which the study of natural history lays before us day by day, may convince us that the nature of plants and animals is as yet very imperfectly known: indeed, much more imperfectly, than many have been apt to imagine.

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[15] *Works,* vol. vii, p. 574; W. H. Meredith, *The Real John Wesley,* p. 156.

All we know is very little in comparison of what remains unknown. And this consideration, as it should prompt us still more diligently to inquire after truth, so it should make us exceeding cautious how we judge of the nature of things from so few principles as we are at present masters of.[16]

He had a highly developed curiosity for facts; and next to knowing them he delighted to relate them. Many of these he cannot explain, but he relates those for which he can get good authority by simply stating them as facts. Of such is the following—to him a most unaccountable method of removing diseases: Greatrix, or Greatarick, or, as his name is more commonly given, Valentine Greatrakes (1628-1682), was a most famous healer. Many of the most substantial of his contemporaries testified to his high personal character, and to the truthfulness of his successful cases of healing. Wesley quotes such an eminent scientist as Robert Boyle, who said, "I give you nothing concerning him but from eyewitnesses." After considering the many reports of this healer, who attracted so much attention that the Royal Society investigated him, Wesley quotes Boyle because of his scientific standing and because he gives the evidence of eyewitnesses of whom he himself was one. Boyle says: "My own brother, some time since, was seized with a violent pain in his head and back. Mr. Greatrix, coming by accident to our house, gave present ease to his head by stroking it. He then stroked his back: the pain immediately fled to his right thigh. He pursued it with his hand to the knee, ankle, foot, toe, then he stroked this, and it was gone." Boyle quotes other cases. We give this as an example of the scientific curiosity of Wesley, and of carefulness in substantiating facts. Wesley not having any explanation for the facts does not pretend to offer one. And this silence of Wesley is what we would hardly expect when Greatrix himself accounted for his power as being a gift from God for service to men. This impresses us the more when we consider another case reported by Boyle: "I had an acquaintance who, after a fever, was very deaf and had a violent pain in her ears. Mr. Greatrix put some spittle in her ears and rubbed them, which cured both the pain and deafness."[17]

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[16] *Survey,* vol. i, p. 296.

Such an account certainly would bring to the memory of one so well acquainted with the New Testament as was Wesley the story of Christ curing a blind man in a similar manner.[18] Greatrix was a sincerely religious man, and we believe he was imitating the method of Christ. But while Wesley believed that all causes were ultimately to be found in God, in this work he is holding himself to scientific description, to secondary causes; and as he has no scientific explanation, he gives none, nor does he consider it proper here to substitute a philosophical explanation. But if anyone had asked him by what power Greatrix did his works of healing, doubtless Wesley would have answered, "By the power of God." For elsewhere he plainly states:

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[17] *Survey,* vol. i, p. 103.

[18] *John* 9. 6.

> I believe firmly, and that in the most literal sense, that "without God we can do nothing"; that we cannot think, or speak, or move a hand or an eye, without the concurrence of the divine energy; and that all our natural faculties are God's gift, nor can the meanest be exerted without the assistance of his Spirit.[19]

This is the philosophical doctrine of the immanence of God. A philosopher expresses it thus: "This doctrine we call the divine immanence; by which we mean that God is the omnipresent ground of all finite existence and activity."[20]

Wesley had the inquiring spirit of the scientist, and his curiosity was insatiable. It is not, however, always satisfied. But he never loses the faith of the scientist—that all things "observe fixed laws,"[21] "uniform laws,"[22] which form a "system of laws."[23] He holds to this faith while admitting that there are wonders in the plant world which he cannot account for. Some plants bloom in the spring, others in the fall; and they bloom independent of the temperature. His account of these puzzling phenomena is:

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[19] *Works,* vol. vi, p. 634.

[20] B. P. Bowne, *The Immanence of God,* p. 3. Reprinted by permission of Houghton Mifflin Company.

> There is considerable difference as to the time when different plants revive after winter. No sooner does the sun begin to warm the earth than the vernal flowers appear, and the trees, one after another, open their buds, and clothe themselves with leaves. But why do many wood plants, as clots-foot, pilewort, violets; and many of the garden plants, as snowdrop, assarabacca, crocus, flower in the very beginning of the spring, when we cannot by any pains or care, bring them to flower after the summer solstice?[24]

He gives a list of thirty-four plants and trees with their dates of leafing in Norfolk, 1755. The dates extend from January 15 to April 22. He observes that "the leafing of several of these varies very much, as the spring is earlier or later. But others of them, be the winter ever so mild, do not put out before their time." He can understand the variation in leafing when the spring is earlier or later, but those which seem to follow dates rather than temperature puzzle him. He, however, in the presence of such puzzles, never harbors anything like magic. He is sure, as has been said above, they "observe fixed laws." And he contents himself with saying, "This also depends on some secret properties, which man is not able to explain."

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[21] *Survey*, vol. i, p. 328.

[22] *Ibid.*, vol. i, 372.

[23] *Ibid.*, vol. ii, p. 227; Bonnet: *Contemplation de la Nature*, vol. i, p. 124.

[24] *Ibid.*, vol. i, p. 328.

Wesley revels in the curiosities he finds everywhere in nature. After describing the laws of sex and the sexual organs in plants, he adds: "But there is a species of willow which appears to change its sex every year. One year it produces male blossoms, and female blossoms the next."[25] And of the aloe he says:

> Of all productions of the vegetable kind, there is none more remarkable than the aloe. It grows exceedingly slowly. But the slowness of its growth is compensated by the bulk to which it arrives, the velocity with which it shoots, and the prodigious number of flowers it produces, which ordinarily amounts to several thousands. It usually takes up three months—May, June, July—from the first budding of the stem, to the finishing of the flowers.

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[25] *Survey*, vol. i, p. 330.

Then he mentions some remarkable exceptions, giving definite examples:

> The aloe in the garden of Cardinal Farnese at Rome, shot up, in the space of one month, to the height of twenty-three feet. Another at Madrid grew ten feet in one night, and twenty-five more in the night following.[26]

As we pass to examples in the animal world we follow Wesley as he puts in "conspicuous light the admirable gradation there is among all beings."[27]

The polypus (our polyp) seems to him to be the medium between animals and plants, and he wonders that "in a polypus, life is preserved after it is cut into several pieces, so that one animal is by section immediately divided into two, three, or more complete animals, each enjoying life and continuing to perform the proper offices of the species."[28] No professional scientist could possibly manifest more enthusiasm than does Wesley over the wonders of the hydra. He relates Bonnet's experiments with them, cutting them in parts and seeing the parts develop into perfect creatures. "Amazed at these wonders," he turns one inside out, and he finds that the hydra "does not suffer the least alteration from that: he lives, grows, and multiplies."[29] Apparently, he did not know of the *Hydra viridis,* or green hydra. The color is due to the presence of chlorophyll, the green coloring matter in plants. He knew that the hydra is a polyp; and he held that "the polyp filled the void between the animal and the vegetable" and sets in a conspicuous light "the admirable gradation there is among all beings."[30] Certainly, if he had known the *Hydra viridis* colored by chlorophyll, he would have cited it as filling up the void between vegetable and animal, "an easy and reciprocal transition of animal into vegetable and vegetable into animal."[31]

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[26] *Survey,* vol. i, p. 351.

[27] *Ibid.,* vol. ii, p. 266.

[28] *Ibid.,* vol. i, p. 292.

Cautiousness of statement is another characteristic of the scientific spirit, and it was a matter of conscience with Wesley. He made his slips, and even admitted that he was not free from unconscious prejudice; but he sought to be cautious. An item from his *Journal* may be cited as an example of his abhorrence of exaggeration, and that when he might have been tempted to condone it.

Wed. 16—I inquired into the state of the society. Most pompous accounts had been sent me, from time to time, of the great numbers that were

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[29] *Survey,* vol. ii, p. 202; Bonnet: *Contemplation de la Nature,* vol. i, p. 47.

[30] *Ibid.,* vol. ii, p. 266.

[31] *Ibid.,* vol. i, p. 346.

> added to it; so that I confidently expected to find therein six or seven hundred members. And how is the real fact? I left three hundred and ninety-four members, and I doubt if there are now three hundred and ninety-six.
>
> Let this be a warning to us all how we give in to that hateful custom of painting things beyond the life. Let us make a conscience of magnifying or exaggerating anything. Let us rather speak under than above the truth. We, of all men, should be punctual in all we say, that none of our words may fall to the ground.[32]

We add a few examples of cautious statement that are found throughout his treatment of physical science: In giving an explanation of thirst, he tells of certain things which are supposed to cause it. But he immediately warns, "I say 'are supposed.'" And so in seeking an explanation of sleep. He states nothing dogmatically, but records what is supposed to be the cause.[33] In some other explanations he is just a little nearer to certainty. So he says it was "probably thus," and proceeds to give the causes, but he does not advance very far before he has to say, "it has been conjectured," and "this is mere conjecture."[34] And in the spirit of true science he is not backward in admitting his ignorance. The glass drop he describes as "a plain matter of fact. I do not undertake to account for it."[35] The phenomena connected with the torpedo fish were explained so unsatisfactorily that he concludes with the question, "But should we not, rather, honestly own our ignorance?"[36]

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[32] *Journal,* March 16, 1748. Vol. iii, p. 338.

[33] *Survey,* vol. i, p. 296.

[34] *Ibid.,* vol. i, pp. 114, 419, 431.

The above are a few of the many references which reveal Wesley as having, in all his discussions of the problem of natural science, the cautiousness which always characterizes the genuine scientist. He never seeks to impose his pet notions upon nature, but looks upon her as presenting living problems to be pondered.

Clearness of vision is another necessary quality of the successful scientist. Wesley's criticism of his own mental processes developed insight in him. Every experience he tried in the crucible of reason. And logic was his pet study. The love of it developed a severely logical mind. Even in his college days he was known for his skill in logic. Southey does not hesitate to say, "No man, indeed, was ever more dexterous in the art of reasoning."[37] And Wesley used logic as a surgeon does a scalpel, dissecting every part of a proposition. This is seen especially in his examination of the members of his societies to see if they had the fact as well as the form of godliness. But a most impartially severe analysis of his thought and feelings we find in that remarkable document in which he tells the history of his love for Grace Murray. Here we find feeling at its height; but reason is there also, and the wonderful thing is that the reason is so clear that it conquers feeling.

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[35] *Survey*, vol. i, p. 47. [36] *Ibid.*, vol. i, p. 229.

[37] Robert Southey: *Life of Wesley*, vol. i, p. 22. Oxford, 1925.

CHAPTER V

WESLEY'S STRICT ADHERENCE TO SCIENTIFIC METHOD

It has been said that "scientific method is very simple; it consists in believing no more than the facts warrant and divesting oneself of national prejudice."[1] This is too simple—and as impossible as it is simple. It is assuming an impossible objectivity for the human mind. Every one comes to all problems, scientific as to all others, in the light of his peculiar life history. And the simple truth is that we cannot understand anyone's work until we know something of one's life. This is why we always are interested in the biography of men of achievement. We wish to know their dominating ideas, even if they are prejudices. We all have our prejudices, although we do not like to call them by that name.

Wesley was not free from prejudice, personal, national, or ecclesiastical. He seemed to realize the influence prejudice had upon reason. He says in one of his letters, "I am ready to give up every opinion which I cannot by calm, clear reason defend."[2] He was sincere in his purpose to keep an open mind. After reading Deuten's *Inquiry Into the Origin of the Discoveries Attributed to the Moderns,* he writes:

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[1] *The Scientific American,* January 16, 1915.

[2] Letter to the Rev. Mr. Downes, November 17, 1759, *Works,* vol. v, p. 428.

> It is true, I am hereby convinced of several mistakes, which I had been in for several years. But I look upon every such conviction as a valuable acquisition.[3]

Again he states his desire to be free from prejudice, to keep his mind open to the rule of reason:

> But some may say I have mistaken the way myself, although I take upon me to teach it to others. It is probable many will think this, and it is very probable that I have. But I trust, whereinsoever I have mistaken, my mind is open to conviction. I sincerely desire to be better informed. I say to God and man, "What I know not, teach thou me."[4]

Wesley recognizes in these words that he is liable to be a victim of his own prejudices as every other person is. In discussing moral certainty he concludes:

> The arguments for it are deduced from all kinds of knowledge; but still the ascent is free; and the will has a great share in prompting or hindering it. And hence it comes, that there is

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[3] *Survey,* vol. ii, p. 345.

[4] Wesley: *Sermons,* Preface.

> room for passion and prejudice of all sorts, to interpose and bias the intellect.[5]

Thus he shows that every person, by the constitution of the human mind, must have his prejudices. This is only another way of saying that everyone must have a philosophy of life. Not that a philosophy of life must be a prejudice, but that a prejudice expresses one's philosophy of life. We may not be conscious of just what that philosophy is; but, generally, those who come in contact with us could tell us. It would be well for all of us if we were as wise as Wesley in facing this fact, for then we would, in a large measure, keep an open mind. To recognize that we cannot escape the fact that each of us does have a philosophy of life, a metaphysic, upon which are based all our theoretical and practical assumptions, is to possess the greatest security against a blind and unproductive dogmatism. When we know what our philosophy is we can test it as to its workability in life. As Henry Jones puts it:

> The need for philosophy is just the ultimate form of the need for knowledge; and the truths which philosophy brings to light are implied in every explanation of things. The only choice we can have is between a conscious metaphysics and

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[5] *Survey,* vol. ii, p. 450.

an unconscious one, between hypotheses which we have examined and whose limitations we know, and hypotheses which rule us from behind, as pure prejudices do. It is because of this that the empiric is so dogmatic, and the ignorant man so certain of the truth of his opinion. They do not know their postulates, nor are they aware that there is no interpretation of an object which does not finally point to a theory of being. We understand no joint or ligament, except in relation to the whole organism, and no fact, or event, except by finding a place for it in the context of our experience. The history of the pebble can be given only in the light of the story of the earth as it is told by the whole of geology. We must begin very far back, and bring our widest principles to bear upon the particular thing if we wish really to know what it is. It is a law that explains, and laws are always universal.[6]

Underlying one's principles and the postulates by which he enters upon the study of physical science will be found one's philosophy. And Haldane expresses the sober truth when he says: "Nothing is more wide of the mark than the contention that philosophy is not needed in scientific work." And he adds: "The inevitable result for men of science who ignore the history and results of philosophy is that they are far more apt to fall victims to all sorts of misunderstandings and even gross superstitions."[7] It is true some able scientists have ignored philosophy; but they have paid the price. As Thomson says, "Some of the ablest scientific minds the world has known have betrayed in their would-be philosophical deliverances an extraordinary naïveté."[8]

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[6] Henry Jones: *Browning as a Philosophical and Religious Teacher*, p. 25. New York, 1891. Reprinted by permission of The Macmillan Company.

So Wesley frankly states his philosophy of life. For years he held it as an intellectual conception; but after his experience in the Aldersgate Street meeting he possesses it as a living experience. This experience he called his conversion, but this was not correct and it was unfair to his past religious life. As Southey points out, "Wesley himself felt, in later life, the inexactness of this description." Later in life, when Wesley looked back upon this part of his progress, he concluded that he had then "the faith of a servant, though not of a son."[9] The all important fact is that Wesley's attitude, before the Aldersgate Street experience, as well as after, was not only theistic, but Christian. But one's philosophical attitude need not interfere with one's loyalty to scientific method; and Wesley's philosophical attitude certainly did not interfere with his loyalty to scientific method. On the contrary, it was altogether in harmony with what is generally recognized by the great scientists as scientific.

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[7] John Scott Haldane: *Mechanism, Life and Personality,* p. 151. London, 1914.

[8] J. Arthur Thomson: *The System of Animate Nature.* In 2 volumes. Vol. i, p. 38. New York.

[9] Robert Southey: *The Life of Wesley, and the Rise and Progress of Methodism.* Edited by Maurice H. Fitzgerald. In two volumes. Vol. ii, p. 111. Oxford, 1925.

Scientific method cannot function until it makes the great fundamental assumption of all science, without which no science is possible—the Uniformity of Nature. "The principle is not an empirical one, for it is not *proved* by experience—though it *is* confirmed—nor is it provable by experience."[10] This fundamental assumption of science is not proved nor is it provable, yet without it "all science would be absolutely impossible;"[11] but does not the principle of the uniformity of nature suggest that nature is a universe, an organic system, an organism? The scientist is interested in the activities of physical objects. If they were everlastingly motionless they would not have the least interest for him. He studies their activities. He finds he can divide them into groups of uniform activities and calls them laws of nature. The uniformity of nature being the same as the universality of law, physical objects, or phenomena, are of much less importance than their activities; and the activities mean nothing to science until the scientist formulates them into laws. He does not find the laws; strictly speaking, he does not discover the laws of nature. They are descriptive formulæ of observed activities. Discussing the laws of nature, Professor J. H. Poynting says, "We must confess that physical laws have greatly fallen off in dignity. We can only assign to them the humble rank of mere descriptions, often erroneous, of similarities which we believe we have observed."[12]

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[10] W. F. Cooley: *The Principles of Science,* p. 27. New York, 1912. Henry Holt and Company.

[11] St. George Mivart: *The Groundwork of Science,* p. 261. New York, 1898. Reprinted by permission of G. P. Putnam's Sons, publishers, New York and London.

And Dr. Slosson's modesty and humility are equal to those of Prof. Poynting. He says, "For the natural laws that we are so proud of and which some men worship, are after all creatures of our own imaginations, more or less crude representations of what we see and hear."[13]

Now, what we are seeking to satisfy in the study of the natural sciences is a mental urge.

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[12] J. H. Poynting, quoted by J. Arthur Thomson. Introduction to Science, p. 49, Report of British A. A. S., 1899, p. 616.

[13] Edwin E. Slosson: *Sermons of a Chemist,* p. 88.

That is, we are tacitly assuming the rationality of nature. And this can mean just one thing: that the activities in nature can be understood, in a measure, at least, by our human minds.

Then we must take the next step, and conclude that the activities of physical nature and the activities of our human minds belong to the same system. And the system is organic. "An organic system is such that the parts act differently when combined and in isolation, so that the law of the aggregate may not be a function of the separate parts at all; or, if it is, is a very complex function."[14] We are part of nature, and our world is a part of the universe. So thought drives us. But observation, as far as we have been able to extend it, tells the same story. Professor Simon Newcomb began his address on "The Universe as an Organism," with these words: "If I were called upon to convey, within the compass of a single sentence, an idea of the trend of recent astronomical and physical science, I should say that it was in the direction of showing the universe to be a connected whole."[15] This address was delivered in 1902.

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[14] A. D. Ritchie: *Scientific Method,* p. 179. New York, 1923. Reprinted by permission of Harcourt, Brace & Co.

[15] Simon Newcomb: *Sidelights on Astronomy,* p. 300. New York, 1906.

Twenty-five years have passed, and the trend has gone beyond the expectation of the great astronomer, Newcomb. Sir Oliver Lodge, in his paper on "Radiation," says: "The atoms arrange themselves in molecules according to certain laws, which are studied in chemistry: and thus all material bodies are constructed. In other words, everything we see or handle, and all the worlds in space, are composed of electricity—that is, of two apparently fundamental things with opposite properties—and at first sight of nothing else."[16] No one, however, knows what electricity is. We only know something of its actions. It so acts that we divide it into protons and electrons, that is, positive and negative electricity. This brings us back to laws. We only know—not electricity—but certain laws, or uniform activities. And the uniformity and continuity of nature are not to be found in phenomena but in their laws. "This fact constitutes the unity, uniformity, and continuity of the system. From the phenomenal standpoint, nature has, and can have, no other uniformity and continuity." The same author holds that "nature itself is only a general term for the established order of procedure; and a natural event is one in which familiar processes can be traced, or which can be connected with other events according to general rules."[17] These general rules, or laws, can do nothing; they are the rules by which some agent works. This is clear when we are considering the civil laws which *we* formulate. But we formulated civil law long before we formulated natural law; and we got our idea of natural law from civil law. Their essential natures are the same—a constant rule of action of some agent. In human society the agents are men; in the physical universe the agent is the First Cause, or God. This is just the position of two great scientific masters whom Wesley followed—Robert Boyle and Sir Isaac Newton. These three were religious, and they all found that their Christian monotheism was not alone in its demand for system and the uniformity of nature which it involves, but their science was making the identical demand. So Wesley, using words as vigorous as Boyle and Newton, concludes:

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[16] *Phases of Modern Science,* First Paper, "Radiation," p. 2. London, 1925.

> The same general design comprises all parts of terrestrial creation. A globule of light, a molecule of earth, a grain of salt, a particle of moldiness, a polypus, a shellfish, a bird, and a quadruped, man, are only different strokes of this de-

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[17] B. P. Bowne, *Theism,* p. 238. New York, 1902. Copyright by. American Book Company, publishers. Reprinted by permission.

> sign; and represent all possible modifications of the matter of our globe.[18]

And Wesley insisted that The First Cause acts "according to these uniform laws."[19]

The uniformity of nature is the basal assumption of science, without which science is impossible; and this means, as we have seen, the uniformity and universality of law. Not only is this the prerequisite of any science; it is the deepest demand of reflective thought. "That things form a system, and that this system is one, is the deepest conviction of reflective intelligence and the supreme supposition of organized knowledge."[20] And untrained thought tacitly assumes it.

> This demand for system and totality the mind has met by forming the notion of nature or the cosmos or the universe, the implicit aim being to pass from the discontinuous events and scattered existences of experience to a law-giving whole.[21]

There must be the law of the whole to have a system. But, as we have seen, such minds as Boyle and Newton saw that this uniformity of nature, or system, means a lawgiver; so Wesley found that the fundamental postulate of natural science was the fundamental postulate of his religious life. Wesley puts all that we have been saying into one very simple sentence:

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[18] *Survey,* vol. ii, p. 268. Bonnet: *Contemplation de la Nature,* vol. i, p. 241.

[19] *Ibid.,* vol. i, p. 372.

[20] B. P. Bowne: *Theism,* p. 51. New York, 1902. Copyright by American Book Company, publishers. Reprinted by permission.

[21] B. P. Bowne: *Metaphysics,* p. 244. New York, 1898. Copyright by American Book Company. Reprinted by permission.

> Indeed all nature is linked together by one law of harmony, which sufficiently proves it to be the work of one wise and gracious author.[22]

And he makes it clear that he means by nature not the earth only, nor the solar system alone, but the entire universe:

> God is a God of the universe, and not merely of this little, struggling world of ours; which is but a little planet, attached to a single star, which appears somewhat eccentrized, from the regular strata of worlds, and which we have been in the habit of contemplating, as of vast and superior magnitude.[23]
>
> The First Cause, the External Self-Existent Reason created the universe. God commands the universe to be; the universe is instantly produced. A single act of his will produced the universe; the same act preserves it.[24]

Wesley never apologizes for his philosophy. He not only believes in God as the First

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[22] *Survey,* vol. i, p. 436.
[23] *Ibid.,* vol. i, p. 436.
[24] *Ibid.,* vol. ii, p. 187. Bonnet, vol. i, p. 2.

Cause; he knows him in his own life, and he sees him in everything. But this does not interfere with his belief in secondary causes. He views the universe as a great machine which moves on perfectly according to the uniform laws which God has ordained. Indeed, the way he states the mechanism of the universe is very close to deism. He says:

> Will you suppose that it derogates from the glory of the Divine Providence to represent the great engine of this visible world, as moving onward in its appointed course without the continual interposture of his hand? It is granted, indeed, that his hand is ever active in preserving all the parts of matter, in all their motions, according to these uniform laws: but I think it is rather derogatory to his infinite wisdom, to imagine that he would not make the vegetable and animal, as well as the inanimate world, of such sort of workmanship, as might regularly move onward in this manner for five or six thousand years, without putting a new hand to it ten thousand times every hour: I say, *ten thousand times* every hour: for there is not an hour nor a moment passes, wherein there are not many millions of plants and animals actually forming in the southern and northern climates.[25]

He goes on to draw the analogy of making a clock, and the creation of the universe is just a great machine constructed some six thousand years ago, and which is now running according to uniform laws. "Such is the workmanship of God; for *nature* is nothing but his art."[26] It is interesting to note that Robert Boyle, who died just twenty years before Wesley was born, objected to such deistical interpretation of nature.

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[25] *Survey,* vol. i, p. 372.

The deists granted that God created the world originally, but then "all things are brought to pass by the settled laws of nature." This is just Wesley's idea. But Boyle, answering the deists, says, "It does not satisfy me." Then he gives his reasons:

> I look upon a law as moral, not a physical cause, as being but a notional thing, according to which, an intelligent and free agent is bound to regulate his actions. But inanimate bodies are utterly incapable of understanding what a law is, or what it enjoins, or when they act conformably or unconformably to it; and therefore the actions of inanimate bodies, which cannot incite or moderate their own actions, are produced by real power, not by laws; though the agents, if intelligent, may regulate the exertions of their power by settled rules.[27]

Boyle in this paragraph reveals genuine

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[26] *Ibid.,* vol. i, p. 373.

[27] *The Works of the Honourable Robert Boyle.* In 6 volumes. Vol. v, p. 521. London, 1772.

insight in the idea of law, and by showing law to be a "notional thing," an abstraction, he has no difficulty with doing away with deism. Sir Isaac Newton takes the same view as does Boyle. In his *General Scholium* to the second edition of his *Principia,* among other things, he says:

> He [God] is omnipresent, not virtually only, but also substantially, for virtue cannot exist without substance. . . . It is allowed by all that the Supreme God exists necessarily; and by the same necessity he exists always and everywhere.[28]

It seems strange that these two great natural scientists should so vigorously assert the immanence of God, while the great evangelical preacher should use such deistical language. The matter is clear when we face the simple fact that Wesley was not literally consistent. And from certain things that both Boyle and Newton wrote it can be shown that they were not literally consistent; for their language sometimes is quite deistical. But what they are doing is asserting the fact of secondary causation; and this is what Wesley is doing in the passage quoted. It must be said, however, that Wesley's language is much more deistical than that of either Boyle or Newton.

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[28] Quoted by Burtt: *Metaphysical Foundations,* p. 257.

His enthusiasm for the methods of physical science caused him to overlook the involvement of his language.

On the other hand we can quote just as strong language for the immanence of God from Wesley as we have from Boyle and Newton. Writing to Mr. John Smith in 1746, he says:

> I believe firmly, and that in the most literal sense, that "without God we can do nothing"; that we cannot think, or speak, or move a hand or an eye, without the concurrence of the divine energy; and that all our natural faculties are God's gift, nor can the meanest be exerted without the assistance of his Spirit.[29]

This letter was written, however, many years before he wrote the appendix to his *Survey*. So we will quote words written as late as November 16, 1777. He says:

> When to the general relation of his providence over us, it is more particularly revealed, that he "upholdeth all things by the word of his power"; that "in him we live, and move, and have our being"; that "not a sparrow falls to the ground without him"; nay, that "the hairs of our head are all numbered."[30]

All of these quotations belong to the language of immanence.

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[29] Wesley: *Works*, vol. vi, p. 634.

[30] *Survey*, vol. ii, p. 457.

In the passage in which the language is so deistical, Wesley is, in fact, insisting upon philosophical and theological influences being kept out of the field of natural science. Here "uniform laws" hold dominion. Their function is not "to *account for* things; but only to *describe* them." His theology and his philosophy would seek to account for things. So he has been loyal to the scientific method by holding himself to the description of phenomena and their laws.

Now we shall take some of the more important factors of the scientific method and try to discover what part they played with Wesley. Our exceedingly simple scientific method said "to believe no more than the facts warrant." This appears the very acme of simple objectivity. However, in this instance, the appearance is illusive. Facts are of no significance until interpreted.

Then our first problem is perception. In perception we grasp an object or an idea in the light of our entire history. As Haldane states it, "Interpretations, traditions and ideals are essential elements in perception."[31] By this time we see how difficult it is to put into practice one of the basic virtues of science, accuracy. Absolute accuracy is an ideal that we hardly hope to realize; the best we can do is to cherish it, and to strive sincerely for it.

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[31] John Scott Haldane: *Mechanism, Life and Personality,* p. 107. London, 1914.

Wesley certainly cherished accuracy as an ideal. When he found upon visiting one of his societies that the facts did not justify the exaggerated reports, he recites in detail the actual facts, and then adds:

> Let this be a warning to us all how we give in to that hateful custom of painting things beyond the life. Let us make a conscience of magnifying or exaggerating anything. Let us rather speak under than above the truth. We, of all men, should be punctual in all we say, that none of our words fall to the ground.[32]

In the preface to his *Survey* he kept his ideal before him so constantly that he felt justified in saying that it was "pure, containing nothing false or uncertain"; and in his second preface, while commending Goldsmith's *History of the Earth and Animated Nature,* he doubts that some parts of it are true. And Goldsmith's credulity surprises him when Goldsmith charges others with credulity, while at the same time expressing a credulity that seems absurd to Wesley. "As where he terms presumption, to deny the existence of Bishop Pontoppidan's Kraken, and the sea-serpent: the one a mile across, the other raising himself out of the water, higher than the main mast of a man of war! Could one who made the least scruple of rejecting these gross absurdities, accuse other writers of credulity?" Wesley's comment is upon the following from Goldsmith:

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[32] *Journal,* vol. iii, p. 338. March 16, 1748.

> These large animals are obliged to show themselves in order to take breath; but who knows the size of those that are fitted to remain forever under water, and that have been increasing in magnitude for centuries. To believe all that has been said of the sea-serpent, or Kraken, would be credulity; to reject the possibility of their existence, would be presumption.[33]

That Wesley has been justified in "rejecting these gross absurdities" is evident from the fact that all subsequent authorities have treated Bishop Pontoppidan's Kraken as a fabulous creature.

Wesley seeks eyewitnesses. And when he does not understand the cause of a phenomenon he simply says, "I do not undertake to account for it," holding it useless "to indulge mere conjecture, where knowledge is unattainable."

He wished to keep clear of "abstract and metaphysical notions," for they tended "to obscure and pollute all philosophy with abstract, idle, vain speculations." His keen desire was "to diligently cultivate the knowledge of nature, and search the properties of particular things."[34] This is the method of genuine science, and Wesley insisted upon it in his own religious life and in that of his followers. The general is abstract, and hence unreal. It has no actual existence. It is the product of human thought, and has only, as Boyle said, "notional" existence. Now, the self is real. And the test of reality is action. And what we are is how we act. Then all self-revelation must be by action. The test was met for Wesley personally when his "heart was strangely warmed" in the meeting in Aldersgate Street, on May 24, 1738. This was experience. In others he could only observe and interpret his observations by reason in the light of his own experience. This method is not infallible, but it is the best human beings can do. As Wesley himself says: "Every man must consult his own reason and experience, and carefully follow them."[35] He met his societies and examined the individuals as to the progress they were making in their experience of God.

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[33] Oliver Goldsmith: *A History of the Earth and Animate Nature,* part iv, bk. i, chap. iii. London, 1774.

Analysis, observation, experiment, with verification the end in view. These were the factors which Wesley had confidence in. They really involve one another: for experiment is only controlled observation; and analysis is essential to both. Wesley is keen to make wide observations and to generalize from them. He observes that "in beasts the smallest animals are noxious, and loathesome; the smallest of birds are the most beautiful, innocent and sportive."[36] From observing hens and other birds it is discovered that if their eggs are withdrawn daily, they will lay five times as many. He cites an example: "A swallow, when her eggs were withdrawn daily, proceeded to lay nineteen."[37]

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[34] *Survey,* Introduction, p. xiii.

[35] *Ibid.,* vol. i, p. 103.

Wesley deplores the tendency in his day toward the disuse of experiments. Referring to the discovery of the transfusion of blood by experiments on live animals, he cites a concrete case which amazed the beholders:

> When the experiment was made before several of the Royal Society, a feeble, worn-out dog, ready to die with age, and hardly able to trail his legs after him, was no sooner filled with young blood than he leaped up as from sleep, shook himself, ran up and down, as lively and as active as a puppy.

He goes on to say that this experiment was made in France upon men with as surprising success. Then he adds:

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[36] *Survey*, vol. i, p. 177.

[37] *Ibid.*, vol. i, p. 190.

> What pity, that so important an experiment should ever fall into disuse! That it is not still repeated upon proper occasions! Especially where all other means fail.[38]

He found time to indulge in experiments of his own. He records in his *Journal:*

> I thought it worth while to make an odd experiment. Remembering how surprisingly fond of music the lion at Edinburgh was, I determined to try whether this was the case with all animals of the same kind. I accordingly went to the Tower with one who plays on the German flute. He began playing near four or five lions; only one of these (the rest not seeming to regard it at all) rose up, came to the front of his den, and seemed to be all attention. Meantime a tiger in the same den started up, leaped over the lion's back, turned and ran under his belly, leaped over him again, and so to and fro incessantly. Can we account for this by any principle of mechanism? Can we account for it at all?[39]

As early as 1747[40] Wesley records his intense interest in electricity, and we have quoted elsewhere his hearty support of the experimenters, and his scorn of "those poor half-thinkers" who were laughing at the investigators. Electricity, as a power used in industry, transportation, illumination, and communication, had not yet been developed. Wesley's scientific imagination could appreciate, however, the undreamed possibilities of the new science, as the nine points about electricity which he learned from reading Franklin's letters to Peter Collinson opened the vista of the future to him.

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[38] *Survey,* vol. i, Introduction, p. xiv.

[39] *Journal,* vol. v, p. 104. December 31, 1764.

[40] *Ibid.,* vol. iii, p. 320. September 16, 1747.

He cannot refrain from exclaiming, "What an amazing scene is here opened for after-ages to improve upon!"[41]

Electricity in practical use was confined to therapeutic purposes. Wesley became enthusiastic over it for these purposes. Yet he kept sane, not running into extremes. He hoped it would be, not a panacea or cure all, as he was confident there was no such thing, but a cheap and ready remedy for many of the ills of men. And in this line he was continually experimenting. He had it tried upon himself for lameness which was "mended, though but slowly";[42] and for neuralgia, which apparently from his description proved successful.[43] So he kept on experimenting. Upon his advice one with "a stubborn paralytic disorder" tried the "new remedy." The patient found immediate relief. Then he records: "By the same means I have known two persons cured of an inveterate pain in the stomach, and another of a pain in his side which he had ever since he was a child." And he adds:

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[41] *Journal,* vol. iv, p. 54. February 17, 1753.

[42] *Ibid.,* vol. v, p. 152. December 26, 1765.

[43] *Ibid.,* vol. vi, p. 3. September 19, 1773.

> Nevertheless, who can wonder that many gentlemen of the faculty, as well as their good friends the apothecaries, decry a medicine so shockingly cheap and easy, as much as they do quicksilver and tar-water.[44]

His experiments in electricity as a healing agent were so successful that he procured apparatus to administer treatments, and these were so successful that he had to open several centers in London. He advised its use in a case of epileptic fits in which it proved successful, and the results were immediate in a case of *angina pectoris*. He says in the hundred of cases treated he did not know "one man, woman, or child, who had received any hurt thereby. So that, when I hear any talk of the danger of being electrified (especially if they are medical men who talk so), I cannot but impute it to great want either of sense or honesty."[45]

As the result of his experiments he wrote a treatise on the subject in 1760. The title is "*The Desideratum;* or *Electricity Made Plain and Useful.* By a Lover of Mankind and of Common-Sense." Eight years later we find him recording: "At my leisure hours this week, I read Doctor Priestley's ingenious book on electricity."[46] His comments are: "He seems to have accurately collected and well digested all that is known on that curious subject."[47] Wesley read Priestley's treatise because of those "original experiments," and this is why he read with so much interest and care Franklin's letters to Collinson. They contained the descriptions of original experiments. Theologically, Franklin and Priestley were far from Wesley, but in scientific method they were one with him. He never allowed differences in opinion to influence him in appreciating the good in other men.

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[44] *Journal,* vol. iv, p. 51. January 20, 1753.

[45] *Ibid.,* vol. iv, p. 191. December 9, 1756.

Macaulay said of Wesley that his "eloquence and logical acuteness might have made him eminent in literature," and that his "genius for government was not inferior to that of Richelieu."[48] And we venture to say that Wesley's insatiable intellectual curiosity, his keen powers of observation, his passion for making actual experiment the test of truth, his power of analysis, his tendency to formulate hypotheses as a possible solution for causes which were not proven, his ever insisting upon the universality of law, his taking for granted the uniformity of nature, and his lively, yet controlled imagination, ever forecasting future triumphs for natural science—when we consider all these things in Wesley, we venture to say that they would have made him eminent as a physical scientist.

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[46] Joseph Priestley: *History and Present State of Electricity, With Original Experiments.* London, 1767.

[47] *Journal,* vol. v, p. 247. January 4, 1768.

[48] Thomas B. Macaulay: *Essay on Southey's Colloquies. Edinburgh Review,* January, 1830. *Critical, Historical and Miscellaneous Essays.* New York, 1869.

William James says, "Science means, first of all, a certain dispassionate method."[49] Wesley certainly had this. It is interesting how often the word "calm" appears in his writings, both in the body and in the title; and he is always ready to submit his case to reason and to give up anything that he cannot maintain by "calm, clear reason." And he was dispassionate enough when the occasion required it to suspend judgment; for this is what the best logic taught him. And he agreed with Bonnet that "Natural history is the best logic, because it best teaches us to suspend our judgment."[50]

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[49] William James: *The Will to Believe,* p. 319. New York, 1898.

[50] *Survey,* vol. ii, p. 253; *Bonnet,* vol. i, p. 194.

CHAPTER VI

FUNDAMENTAL SCIENTIFIC IDEAS OF WESLEY

IN a former chapter we have shown how Wesley insisted upon the uniformity of nature. Anything else would be unthinkable in one who was a Christian evangelist, and of necessity a monotheist. Thus the unity of nature is assumed and implied in all that he writes. The uniformity of nature is the fundamental postulate of science. Strictly speaking, it cannot be demonstrated, yet it is verified as far as nature has been explored; and science is impossible without it. Thus the scientist logically must be a monotheist; and in fact the progress of science has been due more to the monotheism of Christendom than many scientists have realized. It is not a mere coincidence that physical science and Christianity agree in insisting upon a universe, the unity, the uniformity of nature. So Wesley says that nature forms a continuous series, with God as the Creator and Divine Architect of the natural system.[1] He says:

> The whole universe is a picture, in which are displayed the perfections of the Deity. It shows

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[1] *Survey,* vol. ii, pp. 180, 184.

not only his existence, but his unity, his power, his wisdom, his independence, his goodness.[2]

The uniformity of nature is taken for granted by us with such assurance that it never enters the mind of vast numbers that the idea of the universe is a postulate of physical science and not anything that can be proven; it is a demand of thought, not an item of experience. Wesley saw, following Bonnet, that this postulate involved a unitary, self-existent First Cause:

> To be self-existent, endued with almighty power, and to will with infinite wisdom, are the adorable perfections of the First Cause.
>
> The universe is undoubtedly derived from this Cause. In vain do we endeavor by other means to account for it. We may everywhere observe order and ends; the effects of an Eternal Self-Existent Reason.
>
> What mind can fathom the depths of this abyss? What thought can comprehend that power which calls things that are not as though they were? God commands the universe to be: the universe is instantly produced.
>
> A single act of will produced the universe; the same act preserves it.[3]

Wesley held another postulate of science which is implied in the uniformity of nature, that is, the universality of law. In fact, these are but two terms for the same thing; for uniformity of nature means that nature is uniform in her activities. He holds that "all nature is linked together by one law of harmony, which sufficiently proves it to be the work of one wise and gracious Author."[4] He is so impressed with the universality and constancy of the laws of nature that he holds that their source can only be found in "the almighty power of God."[5] And the thought of "these uniform laws" causes him to think of nature as "the great engine of this visible world."

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[2] *Ibid.,* vol. i, p. 368.

[3] *Ibid.,* vol. ii, p. 187; Bonnet: *Contemplation de la Nature,* vol. i, p. 1.

The law of causation is another postulate of science that Wesley took for granted, and he assumes that everyone else does. And he was justified in the assumption. Hume pretended that it was a habit of the mind due to custom. But this was carrying skepticism to the point of intellectual suicide. Causality is a law of the human mind, an imminent mental principle, a form under which we are compelled by the nature of the human mind to think. Mivart does not overstate it when he says that the proposition *"That every change or new existence is, and must be, due to some cause,"* "expresses an intellectual intuition which is for us a necessary and universal truth, and one-self-evident."[6] And Bowne states that "without it, being vanishes into a baseless phantom."[7]

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[4] *Survey,* vol. i, p. 436.

[5] *Ibid.,* vol. i, p. 457.

The indestructibility of matter is another of the fundamental scientific postulates which Wesley was very sure of. He tells his readers how to perform an experiment which will prove that there is air in white paper. Take paper weighing a hundred grains, put it into a flame, and then weigh the ashes. The result is six grains of ashes. "So ninety-four grains out of one hundred are undeniably transformed into air. They cannot be annihilated."[8] Again we quote him: "All is metamorphosis in the physical world. Forms are continually changing. The quantity of matter alone is invariable."[9] The change of form with constancy of substance seems to have had great charm for Wesley. After describing the process of food in the human body, he observes:

> Thus all matter moves in a constant reverbera-

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[6] St. George Mivart: *The Groundwork of Science,* p. 256. Reprinted by permission of G. P. Putnam's Sons, publishers, New York and London.

[7] B. P. Bowne: *Theory of Thought and Knowledge,* p. 90. Copyright by American Book Company. Reprinted by permission.

[8] *Survey,* vol. ii, p. 53.

[9] *Ibid.,* vol. ii, p. 226; Bonnet, vol. i, p. 22.

> tion. And it may be truly said that the matter which clothes the present body clothed the bodies of our ancestors some thousand years ago, and will continue its successive alterations as long as the world shall endure.[10]

And he holds that the nature and number of the elements cannot change:

> Yet if we would account for the origin of these elements, we are involved in endless uncertainty. We can only say, He who appointed their different uses in all ages has rendered those uses infallible by the impossibility of either destroying or increasing them.[11]

This doctrine of the indestructibility of matter Wesley applied to life; and he reaches a doctrine of the indestructibility of life. The argument, a rather curious one, is as follows:

> God, in creating the first individual of each species, animal or vegetable, not only gave a form to the dust of the earth, but a principle of life, inclosing in each, a greater or smaller quantity of original particles, indestructible and common to all organized beings. These pass from body to body, supporting the life, and ministering to the nutrition and growth of each. And when any body is reduced to ashes, these original particles, on which death hath no power, survive and pass into other beings, bringing with them nourishment and life. Thus every production, every

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[10] *Survey,* vol. i, p. 70.

[11] *Ibid.,* vol. i, p. 306.

> renovation, every increase by generation or nutrition, supposes a preceding destruction, a conversion of substance, an accession of these original particles, which ever subsisting in an equal number, render nature always equally full of life.
>
> The total quantity of life in the universe is therefore perpetually the same. And whatever death seems to destroy, it destroys no part of that primitive life, which is diffused through all organized beings. Instead of injuring nature, it only causes it to shine with the greater lustre. If death is permitted to cut down individuals, it is only, in order to make of the universe, by the reproduction of beings, a theater ever crowded, a spectacle ever new. But it is never permitted to destroy the most inconsiderable species.[12]

The argument is not a very impressive one, and we do not imagine it will appeal to very many minds, either scientific or lay. And his conclusion as to the indestructibility of species we know is not true. Certainly, species have been destroyed. Not to mention the large number of extinct animals and plants to which paleontology gives unimpeachable evidence there are in historical times not a few species which the ruthless hand of man has completely destroyed. Examples are the dodo and the passenger pigeon. Then the argument is not a scientific one, but a philosophical conclusion based upon a philosophical principle. There is no scientific evidence that there was created originally a constant number of species. It is an assumption, philosophical or scientific, depending upon the way it is used. Wesley has used it as a philosophical one; and he has done just what he objected to Aristotle doing, indulging in "abstract, idle, vain speculations."

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[12] *Survey,* vol. i, pp. 304, 305.

On the other hand, Wesley, in his doctrine of the indestructibility of life, came near by three quarters of a century anticipating the doctrine of the conservation of energy. The principle of life was to be found in the soul or spirit. The body is material, and, hence, purely passive:

> A substance without extension, solidity, and form, is united to an extended, solid and formed substance. A substance which thinks, and which has a principle of action in it, is united to a substance void of thought and purely passive.[13]

The spirit, on the other hand, is "an immaterial substance, or something that is not matter."

> It is because we have no idea of a spirit, that we are naturally led to express it by a negative; to call it an immaterial substance, or something that is not matter; something that is not anything

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[13] *Survey,* vol. ii, p. 217; Bonnet, vol. i, p. 92.

that we know; which forces us to conceive and express it in this imperfect manner.[14]

The principle of action, for Wesley, was found in spirit, and he identified life with spirit; and spirit is the source of all force or energy. And, as we have seen, Wesley held the indestructibility of both matter and life. Now in 1840 Faraday said: "Nowhere is there a pure creation or production of power without a corresponding exhaustion of something to supply it." Like Wesley he had the essential idea. Later the doctrine of the conservation of energy was formulated. And the scientific world agreed that "to create or annihilate energy is as impossible as to create or annihilate matter."[15] Wesley insisted upon both of these propositions.

While Wesley was very tenacious in insisting upon the indestructibility of matter, he must have had some difficulty in answering those who drew the conclusion that matter therefore was eternal. Of course such conclusion does not necessarily follow, but it is easy to jump to it; and it would appeal to the untrained mind. He would not have such possible difficulty with his doctrine of the indestructibility of life, which, we have seen, logically worked out would have appeared as the conservation of energy. So he had the raw materials of the modern doctrine that matter may be transformed into energy and energy into matter. And he would have certainly rejoiced to hear a scientist say, "Matter is now regarded as a form of energy, or as transformable into energy."[16] And it would not have troubled him to see in a scientific journal an article with the caption, "The Death of Matter."

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[14] *Ibid.*, vol. ii, p. 440.

[15] Henry Smith Williams: *The Story of Nineteenth Century Science*, p. 209. Reprinted by permission of Harper and Brothers.

Wesley held that extension was the distinguishing quality of matter, and this involved its indefinite divisibility:

> Divisibility likewise belongs to all bodies. For since no body can be conceived that is not extended, and extension supposes parts, it follows, that every body, however small, is divisible: perhaps not by the art of man, but in its own nature. Nor is it any objection that our understanding cannot comprehend infinite divisibility. It can not: nor can it comprehend infinite number; or, indeed, infinities of any kind.[17]

Wesley held that matter is "purely passive." This may seem strange to the present age, which is accustomed to think of the particles of matter ever in motion; and from which conception the conclusion is drawn that motion is a property of matter. The law of inertia is with Wesley in this case. "The first and basal law of motion is that of inertia, according to which a body cannot start or stop itself. If at rest, it remains at rest; and if in motion, it remains in uniform motion in a straight line unless interfered with from without."[18] This does not deny that the particles of matter are always in motion.

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[16] Edwin E. Slosson: *Sermons of a Chemist,* p. 214.

[17] *Survey,* vol. ii, p. 172.

It may well be that motion is a universal fact, as an effect of the moving forces of the elements; but this is far from making it an inherent and essential attribute of matter. In fact, motion is neither natural nor unnatural, but a condition in which matter may or may not be; and in this sense matter may be said to be indifferent to motion. If in motion, it remains in motion; and if at rest, it remains at rest. This is the only view that does not conflict with the law of inertia—a law which, whether an *a priori* truth or not, is still too well attested by consequences to be questioned as to its validity. The motions of the elements are the products of their interaction, and the condition of any element, whether in motion or at rest, has its external ground.[19]

This is just the position of Wesley. He

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[18] B. P. Bowne: *Metaphysics,* p. 227. Copyright by American Book Company. Reprinted by permission.

[19] *Ibid.: Metaphysics,* p. 220.

says, "It is beyond doubt, that a body moved, communicates its motion to another, though in its own nature it be purely passive."[20]

And the fact that the cosmos is a physical system substantiates Wesley's position. In a system the elements must be mutually interdependent.

> Each, then, is what it is, and does what it does, because all the rest are what they are and do what they do. Interaction in general means simply the determination of one thing by another; and in a system where there is nothing but interaction the activities of each thing are necessarily objective, and the determinations of each thing are necessarily from without. But this is the conception we must form of the physical system. In it we know of nothing but interaction, or mutual determination. There is no ground for affirming any subjectivity or self-determination in them; and they are members of the system only as each is what the system demands.[21]

So the law of inertia is involved in the idea of a system.

The idea of an all-embracing system is emphasized on nearly every page of Wesley's *Survey of Natural Science;* and inseparable from it is the idea of everything is linked to everything else so gradually that the connections are almost insensible. This is the idea of evolution which was always a thing of beauty to Wesley. But this requires a chapter to itself.

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[20] *Survey,* vol. ii, p. 172.

[21] B. P. Bowne: *Metaphysics,* p. 235. Copyright by American Book Company. Reprinted by permission.

CHAPTER VII

WESLEY AND EVOLUTION

EVOLUTION has come to mean so many things that the word practically has no meaning until the one using it states his definition. It is used here as a cosmic formula. But this has to be defined. As such a formula, "evolution may be a description of the order of phenomenal origin and development, and it may be a theory of the metaphysical causes which underlie that development."[1] As we have seen many times in this study that God is the only metaphysical cause that Wesley recognized, so in our discussion of evolution in relation to Wesley it means simply a cosmic formula. It is a scientific doctrine, not a metaphysical theory. It is generally agreed to-day that science is description—"the primary aim of science is the concise description of the knowable universe."[2] We have seen that this was Wesley's view—"I endeavour throughout, not to *account* for things; but only to *describe* them."[3] And all our references to evolution will be to it as a scientific formula.

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[1] B. P. Bowne: *Metaphysics,* p. 271. New York, 1898. Copyright by American Book Company. Reprinted by permission.

[2] J. Arthur Thomson, *Introduction to Science,* p. 35. Reprinted by permission of Henry Holt and Company.

Evolution, as an all-inclusive idea, means "defined as a continuing process in the history of nature."[4] It is very ancient. Osborn says that Empedocles (495–435 B. C.) "may justly be called the father of the evolution idea; as the origin of things he believed to be a very gradual process."[5] But this authority holds that it was Aristotle who "by the force of his own genius created natural history," and he states Aristotle's position as follows:

> Aristotle believed in a complete gradation in Nature, a progressive development corresponding with the progressive life of the soul. Nature, he says, proceeds constantly by the aid of gradual transitions from the most imperfect to the most perfect, while analogies which we find in the various parts of the animal scale show that all is governed by the same laws—in other words, nature is a unit as to its causation.[6]

Aristotle's thought and expression is remarkably like Wesley's. The latter quotes, with approval, John Locke, in his *Essay Concerning Human Understanding:* "In all the visible and corporeal world we see no chasm, no gaps." And Wesley himself holds that "the whole process of nature is so gradual, that the entire chasm from a plant to man is filled up with divers kinds of creatures, rising one above another, by so gentle ascent that the transitions from one species to another are almost insensible."[7]

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[3] *Survey,* Preface.

[4] William North Rice, *Christian Faith in an Age of Science,* p. 142. New York, 1903.

[5] Henry Fairfield Osborne, *From the Greeks to Darwin,* p. 37. New York, 1894. Reprinted by permission of Charles Scribner's Sons.

[6] Osborn: *From the Greeks to Darwin,* p. 48. Reprinted by permission of Charles Scribner's Sons.

In the words of Aristotle as in the words of Wesley, we have the essential idea of evolution—continuous, gradual, orderly, and, on the whole, progressive change. That the cosmos is a development from a simple primitive state to complex and higher states is what we mean by evolution.[8] And so the modern authorities agree:

> Changing order, orderly change, and this everywhere—in nature inorganic and organic, in individual and social life—for this vast conception, now everywhere diffusing, often expressed, rarely as yet applied, we need some general term —Evolution.[9]

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[7] *Survey,* vol. ii, pp. 185, 186.

[8] See Solomon Herbert: *The First Principles of Evolution,* p. 2. London, 1913.

[9] See Patrick Geddes and J. Arthur Thomson: *Evolution,* p. viii. New York, 1911.

> We have given the name of evolution to this long process of modification and development through which these newer and higher types have been produced.[10]
>
> The long earth story is thus one of orderly and *progressive* change, of persistent production of higher types, that is, development.[11]

The quotations from the modern writers show that they have added nothing to what Aristotle said as to the essential idea of evolution; and that they agreed with him that the cosmos displays a scale of being which arises from the simple to the complex, gradually, orderly, and, on the whole, progressively. And this view is at least as old as Aristotle, so it seems to have had always a peculiar charm for the great minds of the race. And this is simply another way of saying that there must be great truth in it. We can begin to appreciate the greatness of this thought when Windelband tells us that by it Aristotle solved "the fundamental problem of Greek philosophy." That problem was, "How, behind the changing multiplicity of phenomena, a unitary and abiding Being is to be thought?" And Aristotle's answer is, "By a concept of relation, that of development."[12] The abiding Being is the "essence which unfolds in the phenomena themselves." This is one with modern evolutionary thought. Thomson says, "It is a fundamental idea of evolution that there is nothing in the end which is not also in the beginning."[13] But this idea must not be given a pantheistic interpretation, for Aristotle's idea of God was not pantheistic. According to him, the highest Being or Essence was "*pure thought,* which is employed with itself and its eternal nature; that thought which presupposes nothing else as an object, but has itself for its constant, unchanging content, the thought of thought—self-consciousness."[14]

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[10] See W. F. Cooley: *The Principles of Science,* p. 174. New York, 1912. Henry Holt and Company.

[11] See Geddes and Thompson, *Evolution.* Reprinted by permission of Henry Holt and Company.

THE SCALE OR LADDER OF BEING

The idea of the scale of being was fundamental with Wesley as it was with Aristotle. It may be that it was from Aristotle that Wesley received his first suggestion of the scale of being. It is true that "Aristotle was the first to conceive of a genetic series, and his conception of a single chain of evolution from polyps to man was never fully replaced until the beginning of this century"[15] [that is, the nineteenth century]. In the first edition of the *Survey,* some years before the appearance of Bonnet's *Contemplation de la Nature,* Wesley wrote: "Thus we reduce nature to what it is ever found to be, simple in the beginning of its course, but afterwards when it is distributed, magnificent beyond expression."[16] And throughout these first two volumes we find him ever trying to span the chasm between the different species by "almost insensible transitions," and proclaiming that "every alteration is an improvement." It was this idea which was basal in Bonnet's *Contemplation de la Nature* that gave this work its charm for Wesley, and caused him to describe it as "that beautiful work" with its "admirable chain of reasoning." Wesley, as has been said before, was a religious genius with an insatiable intellect. And anything in philosophy or science that confirmed his beliefs aroused his enthusiasm. The idea of the scale of being, which is essential to the concept of evolution, rested upon an infinite, unitary, intelligent First Cause. And Wesley was too bright to fail to grasp and support this and the essential conception which we to-day call evolution gave to the fundamental article of his faith—God; one, infinite, and intelligent.

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[12] William Windelband: *A History of Philosophy,* p. 139. New York, 1901.

[13] J. Arthur Thomson: *Darwinism and Human Life,* p. 29. New York, 1910. Reprinted by permission of Henry Holt and Company.

[14] William Windelband: *History of Philosophy,* p. 145. Reprinted by permission of The Macmillan Company.

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[15] Henry Fairfield Osborn: *From the Greeks to Darwin,* p. 44. New York, 1894. Reprinted by permission of Charles Scribner's Sons.

[16] *Survey,* vol. i, p. 118.

Wesley, like Aristotle, had a scale of being; and he was simply fascinated with the idea. It was all inclusive.[17]

> There is nothing then by itself. Every being has an activity peculiar to it, determined by the rank appointed for it in the universe. A mite is a very small moveable creature, which acts in concert with others, whose activity extends to much greater distances. The spheres thus enlarging themselves more and more, this amazing progression rises by degrees from the vortex of amber to the solar vortex; from the sphere of a mite to that of an angel.[18]

Again Wesley says:

> Between the lowest and highest degree of corporeal and spiritual perfection, there is an almost infinite number of intermediate degrees. The result of these degrees composes the universal chain. This unites all beings, connects all worlds, comprehends all the spheres. One Sole Being is out of this chain, and that is He that made it.[19]

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[17] William Windelband: *History of Philosophy*, p. 145.

[18] *Survey*, vol. ii, p. 191; Bonnet: *Contemplation de la Nature*, vol. i, p. 8.

[19] *Ibid.*, vol. ii, p. 194; Bonnet, vol. i, p. 26.

This thought of gradual progression of the scale of being so fascinates Wesley that he cannot find words too good to express his joy:

> It is wonderful to observe, by what a gradual progression the world of life advances, through an immense variety of species, before a creature is found, that is complete in all its parts. . . .
>
> The whole process of nature is so gradual that the entire chasm from a plant to man is filled up with divers kinds of creatures, rising one above another by so gentle ascent that the transitions from one species to another are most insensible. And the intermediate space is so well husbanded that there is scarce a degree of perfection which does not appear in some.

The charm of this great fact in nature forces him to extend the scale, and thus make it perfect. But he offers it as probable, that is, a speculation:

> Now since the scale of being advances by such regular steps as high as man, is it not probable that it still proceeds gradually upward, through beings of superior worth? As there is an infinitely greater space between the Supreme Being and man than between man and the lowest insect.[20]

Wesley here is allowing his enthusiasm for the idea of the scale of being and the general idea of evolution to suggest a speculation that is the same in form, if not in function, with the old Gnostic heresy of a long series of beings between man and God, which heresy gave the early church so much trouble. We are not concerned with the implications of Wesley's extension of the scale of being and the application of our evolution idea to all creation, but cite it as an example of the grasp that the essential idea of evolution, gradual progression, had upon him.

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[20] *Ibid.*, vol. ii, p. 185.

Wesley's Scale of Being is as follows:

I. GENERAL

Everything is linked with everything else in the universe by insensible degrees, in a universal chain, from "the vortex of amber to the solar vortex; from the sphere of a mite to that of an angel." From general principles "arises that indissoluble union which forms, of past, present, future, and eternity, one entire individual whole."[21]

II. THE COSMOS

Our world is one of the innumerable bodies of the cosmos, and the laws of the cosmos apply to this planet.[22]

From this brief theoretical sketch we derive an idea, which the ancient philosophy would not give us, of the amazing grandeur, magnificence, and sublimity of universal being, all the visible part of which is but a mere speck, a comparatively little, branching fragment of the extended universe. And although it is impossible for us to attain to an identifying sensibility, and actual restrospect, in consequence of our limited situation, yet there is every reason to conclude, from analogy, observation, and reflection, that infinite space is thus occupied, and diversified, and that God is a God of the universe, and not merely of this little, straggling world of ours; which is but a little planet, attached to a single star, which appears somewhat eccentrized, from the regular strata of worlds, and which we have been in the habit of contemplating, as of vast and superior magnitude.[23]

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[21] *Survey,* vol. ii, p. 192. Wesley follows Bonnet's Scale of Being.

[22] *Ibid.,* vol. ii, p. 134.

There are three kingdoms upon our planet, the fossil [the mineral], the vegetable, and the animal. These are all bound together by a chain of gradual progression.

III. THE FOSSIL, OR MINERAL KINGDOM

There are three kinds of composition—fluids, unorganized solids, and organized solids. And these are connected by a gradual scale.[24]

And if we go on, till we come to the lowest and most inorganical parts of matter, we shall find everywhere that the several species are linked together, and differ in almost insensible degrees.[25]

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[23] *Ibid.,* vol. ii, p. 134.

[24] *Ibid.,* vol. ii, pp. 196-197; Bonnet, vol. i, p. 35.

IV. Vegetable Kingdom

By organized solids Wesley means living bodies; and "leafed stones" "seem to constitute the passage from rough to organized solids." He says "seem" because he is not sure; but he feels justified in expressing his scientific faith. So he ventures that "the vacancy we suppose left between the vegetable and mineral, will, in all probability, be one day supplied. There was a similar void twixt the animal and vegetable: the polypus now fills it up, and sets in a conspicuous light the admirable gradation there is among all beings.[26]

V. Animal Kingdom

The link between the vegetable and animal kingdoms he finds to be the polypus[27] and the sensitive plant.[28] And "insects fill up the chasm between animal and vegetable nature."[29]

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[25] *Survey,* vol. ii, p. 186.

[26] *Ibid.,* vol. ii, p. 266; Bonnet: vol. i, p. 232.

[27] *Ibid.,* vol. ii, p. 194; Bonnet: vol. i, p. 28.

[28] *Ibid.,* vol. ii, p. 201; Bonnet: vol. i, p. 45.

[29] *Ibid.,* vol. i, p. 157.

1. *Insects*

He suggests that frogs and lizards are the links between insects and reptiles: "May the frog and the lizard, which bear so near a resemblance to insects, be a ramification of them?"[30]

2. *Reptiles*

"Animals with shells bear an affinity to fishes. Reptiles seem to take place between or next to them, being united to shelled animals by the slug, and to the fishes by the water-serpent."[31] And "the eel by its formation, and creeping fishes by their method of moving, connect fishes with the water-serpent."[32]

3. *Fishes*

The link between fish and birds Wesley finds in barnacles and in the flying-fish.[33]

4. *Birds*

"The bat seems the medium between bird and beast."[34] And "the ostrich, with the feet of a goat, which rather runs than flies, seems to be another link which unites birds to quadrupeds."[35]

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[30] *Ibid.*, vol. ii, p. 207.

[31] *Ibid.*, vol. ii, p. 208.

[32] *Ibid.*, vol. i, p. 188.

[33] *Ibid.*, vol. ii, p. 208.

[34] *Ibid.*, vol. i, p. 188.

[35] *Ibid.*, vol. ii, p. 209.

5. *Beasts*

The beasts are linked with man by the structure of their bodies. "And certainly, with regard to the structure of the body, the difference is not extremely great between man and other animals."[36]

"But this is a wonderful agreement between the bodies of men and beasts, not only with regard to the structure, but also to the use of the several parts."[37] "From man, the ape, the horse, to the squirrel, weasel, and mouse, we shall see throughout the same design, the same arrangement, the same essential relations, except in a few particulars."[38] "In the APE-kind, we see the whole external machine strongly impressed with the human likeness; these walk upright, want a tail, have fleshy posteriors, have calves to their legs, and feet nearly like ours."[39]

6. *Man*

Man is the end of creation. Everything exists for him. "Everything is calculated by Divine Wisdom, to make us wiser and better. And this is the substance of true philosophy."[40] He is the "lord of creation," and there exists a great difference between him and the brutes: "He has the gift of speech."[41] He can generalize: "The faculty of generalizing ideas, or abstracting from a subject what it has in common with others, and expressing it by arbitrary signs, constitutes the highest degree of spiritual perfection; and therein consists the difference between the human soul and the soul of brutes."[42] This is in agreement with Aristotle: "Man is the highest point of one long and continuous ascent; other animals have the faculty of thought; man alone generalizes and forms abstractions."[43] And man alone is capable of religion:

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[36] *Survey,* vol. i, p. 121.

[37] *Ibid.,* vol. i, p. 122.

[38] *Ibid.,* vol. ii, p. 265.

[39] *Ibid.,* vol. i, p. 146.

[40] *Ibid.,* vol. i, pp. 156, 369.

> Wrapped in the thickest darkness, the rest of the animal creation are ignorant of the hand that created them. They enjoy an existence, but can not trace the Author of life. Man alone soars to God the principle, and prostrate at the foot of the throne of the Almighty, adores with the profoundest veneration, and with the most lively gratitude, the ineffable goodness that created him.[44]

It is interesting to observe that Alfred Russel Wallace agrees with Wesley in what has just been quoted:

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[41] *Ibid.*, vol. ii, p. 212.

[42] *Ibid.*, vol. ii, p. 193. Bonnet, vol. i, p. 24.

[43] Henry Fairfield Osborn: *From Greeks to Darwin*, p. 49. Charles Scribner's Sons.

[44] *Survey*, vol. ii, p. 213; Bonnet, vol. i, p. 80.

> We find, then, that the whole system of life-development is that of the lower providing food for the higher in ever-expanding circles of organic existence. That system has succeeded marvelously, even gloriously, inasmuch as it has produced, as its final outcome, Man, the one being who can appreciate the infinite variety and beauty of the life-world, the one being who can utilize in any adequate manner the myriad products of its mechanics and its chemistry. Now, whatever view we may take of the universe of matter, of life, and of mind, this *successful* outcome is a proof that is the only practicable method, the only method that could succeed. . . . If . . . it is, as I urge, the foreordained method of a supreme mind, then it must with equal certainty be the *best,* and almost certainly the *only* method that could have subsisted through the immeasurable ages and could have then produced a being capable, in some degree, of comprehending and appreciating it. For that is surely the glory and distinction of man—that he is continually and steadily advancing in the knowledge of the vastness and mystery of the universe in which he lives.[45]

In its broad outline and in its culmination, Wesley's scale of being is in substantial agreement with the leaders of modern science; for certainly the codiscoverer with Darwin of the modern theory of biological evolution speaks with an authority that carries weight. Wesley's scale of being, we have seen, "extends from the atom to all creation, the Author alone being outside the all-inclusive design."[46]

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[45] Alfred Russel Wallace: *The World of Life,* p. 403. New York, 1911. Reprinted by permission of Dodd, Mead and Company.

Indeed, nothing could be more inclusive than this scale of being which, with such enthusiasm, Wesley lays before us. And in general outline it agrees with that which we find in the scientific works to-day. But it must be understood that it cannot be followed rigidly as to chronology. Plants are placed before animals; but this must not be taken that all plants are before any animal. For it is not only difficult to distinguish between the two in some cases, but even the criterion by which we decide whether a creature is a plant or an animal is not too certain. It is true that even to-day we find some writers making locomotion the basic test of animal life as distinguished from plant life. This, however, is very crude. Wesley knew better. He says, after giving examples of animals which have not the power of locomotion, "Thus it appears that the locomotive faculty is not more proper for distinguishing the vegetable from the animal, and those other characters which we have before treated of." If there is any distinguishing character, he thinks, it is feeling. "If there be any faculty which seems peculiar to the animal, it is certainly that of feeling."[47]

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[46] *Survey,* vol. ii, p. 268; Bonnet, vol. i, p. 241.

The problem of the time element would not occur to Wesley; for he believed all forms of life were created by God at the beginning. He made these original models:

> The animal and the vegetable in these productions are but mere instruments under his supreme ruling power, like artless pencils in a painter's hand, to form the images that his thought had before designed; and it is that God alone, who before all worlds contrived these models of every species in his own original idea, that appoints what under agents he will employ to copy them.[48]

So all species were created in the beginning by God, and a species is indestructible:

> God in creating the first individual of each species, animal or vegetable, not only gave a form to the dust of the earth but a principle of life, inclosing in each a greater or smaller quantity of original particles indestructible and common to all organized beings. . . . But it is never permitted to destroy the most inconsiderable species.[49]

It is easy enough for us to smile at what we may look upon as the simple-mindedness of Wesley. We know that species have become extinct. There is abundance of evidence of the extinction of species in all phases of life, even of man. At least four races have become extinct, namely, Trinl, Heidelberg, Neanderthal, and Piltdown.[50] But the evidence was not so abundant or accessible in Wesley's day. Then Wesley could not abstract himself from the prevailing thought of his time. The immutability of species was the prevailing dogma in natural history in his day. Linnæus, the great naturalist and contemporary of Wesley, held at first the absolute fixity of species, and later modified this view somewhat. But it is true, as Lamarck said:

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[47] *Survey*, vol. ii, pp. 297, 298; Bonnet, vol. ii, pp. 101, 102.

[48] *Ibid.*, vol. i, p. 370.

[49] *Ibid.*, vol. i, pp. 304-305.

> The first conclusion (Special Creation) is one which has been held by nearly everyone up to the present time. It attributes to each animal a constancy of structure, and parts which have never varied and will never vary.[51]

And by "everyone" he means to include the naturalists. Nor is simple-mindedness confined to flaming evangelists. Dr. Edwin E. Slosson has lately written, "We cannot be so cocksure about many ideas as were the simple-minded scientists of the former century."

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[50] See Henry Fairfield Osborn: *Men of the Old Stone Age,* p. 491.

[51] Henry Fairfield Osborn: *From the Greeks to Darwin,* p. 164. Reprinted by permission of Charles Scribner's Sons.

Even the strongest and most alert minds find it difficult to emancipate themselves from the prevailing methods and forms of thoughts. Darwin confesses that he himself was a victim to this domination. He reached the following conclusion:

> Although much remains obscure, and will long remain obscure, I can entertain no doubt, after the most deliberate study and dispassionate judgment of which I am capable, that the view that most naturalists until recently entertained, and which I formerly entertained—namely, that each species has been independently created—is erroneous. I am fully convinced that species are not immutable; but that those belonging to what are called the same genera are lineal descendants of some other and generally extinct species, in the same manner as the acknowledged varieties of any one species are the descendants of that species. Furthermore, I am convinced that Natural Selection has been the most important, but not the exclusive, means of modification.[52]

It is evident that his conclusions had become very strong convictions; yet they did not save him from the influence of his former ideas. So he explains one of his oversights:

> Nevertheless, I did not formerly consider sufficiently the existence of structures, which, as

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[52] Charles Darwin: *The Origin of Species,* vol. i, p. 6. New York, 1898.

> far as we can at present judge, are neither beneficial nor injurious; and this I believe to be one of the greatest oversights as yet detected in my work. I may be permitted to say, as some excuse, that I had two distinct objects in view: firstly, to show that species had not been separately created, and, secondly, that natural selection had been the chief agent of change, though largely aided by the inherited effects of habit, and slightly by the direct action of the surrounding conditions. I was not, however, able to annul the influence of my former belief, then almost universal, that each species had been purposely created; and this led to my tacit assumption that every detail of structure, excepting rudiments, was of some special, though unrecognized service.[53]

We quote these words to remind us that if such an independent thinker as Darwin is exposed to the domination of the mental atmosphere of his times, we all need to be on our guard lest we imagine that we have good reasons for holding a belief when the only reason is that it is the vogue. Huxley cautioned us in this matter in regards to *The Origin of Species:*

> History warns us that it is the customary fate of new truths to begin as heresies and to end as superstitions; and, as matters now stand, it is

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[53] Charles Darwin: *The Descent of Man,* p. 61, New York, 1886.

> hardly rash to anticipate that, in another twenty years, the new generation, educated under the influences of the present day, will be in danger of accepting the main doctrines of the "Origin of Species" with as little reflection, and it may be with as little justification, as so many of our contemporaries, twenty years ago, rejected them.[54]

It is not remarkable that Wesley was dominated by the doctrine that all species were created at one stroke. Almost everyone was in his day, even among the great naturalists, as we have seen. The remarkable thing is that his language is so much like Darwin's after the latter was convinced of the mutability of species. Here is Wesley's statement of the general design:

> The same general design comprises all parts of the terrestrial creation. A globule of light, a molecule of earth, a grain of salt, a particle of moldiness, a polypus, a shellfish, a bird, and a quadruped, a man, are all different strokes of this design; and represent all possible modifications of the matter of our globe. My expression falls greatly beneath reality; these various productions are not different strokes of the same design; they are only so many various points of a single stroke, that by its infinitely varied cir-

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[54] Quoted by James Francis Abbott in his *Elementary Principles of General Biology,* from T. H. Huxley, *The Coming of Age of the Origin of Species.* 1880. Reprinted by permission of The Macmillan Company.

> cumvolutions, traces out to the astonished eyes of the cherubim, the forms, proportions, and concatenation of all earthly beings. This single stroke delineates all worlds, the cherub himself is a point in it: and the adorable Hand which drew this stroke, alone possesses the method of describing it.[55]

This is simple enough when we first read it. The meaning is clear; God willed the terrestrial creation and it immediately came into existence. It is a speculative conception. Wesley could not prove it. Nor can we disprove it. But it does not appeal to us; it does not fall in with our way of thinking. On the other hand we should not allow ourselves to assume that we have proven evolution. In such a realm we may hold what we please, but we should remember that caution is characteristic of the genuine thinker. Dr. Millikan's words are to be heeded:

> The pathetic thing is that we have scientists who are trying to prove evolution, which no scientist can ever prove. I do not want you to think that I am on the other side. I am not. I am only asking for more caution.[56]

Darwin could have had Wesley in mind

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[55] *Survey,* vol. ii, p. 268; Bonnet, vol. i, p. 241.

[56] Dr. Robert Andrews Millikan's address before the American Chemical Society at its meeting at Los Angeles.

when he wrote the following words in the closing pages of his "Origin of Species":

> Authors of the highest eminence seem to be fully satisfied with the view that each species has been independently created. To my mind it accords better with what we know of the laws impressed on matter by the Creator, that the production and extinction of the past and present inhabitants of the world should have been due to secondary causes, like those determining the birth and the death of the individual. When I view all beings not as special creations, but as lineal descendants of some few beings which lived long before the first bed of the Cambrian system was deposited, they seem to me to become ennobled. . . . There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, while this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and wonderful have been and are being evolved.[57]

The difference between Wesley and Darwin is much less than first appears. Both agree that the Creator was the Author of the general design; with Wesley, God by one stroke created all forms of being; with Darwin he created a few forms, the others developed through environmental changes. But after the creation of the first forms Wesley is as tenacious for secondary causes as was Darwin. Indeed, Wesley's statement of the working of secondary causes, repeating the quotation above, readily lends itself to a deistical interpretation:

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[57] Charles Darwin: *The Origin of Species,* vol. ii, pp. 304, 306. New York, 1898.

> Will you suppose that it derogates from the glory of Divine Providence, to represent the great engine of this visible world, as moving onward in its appointed course, without the continual interposure of his hand? It is granted, indeed, that his hand is ever active in preserving all the parts of matter, in all their motions, according to these uniform laws: but I think it is rather derogatory to his infinite wisdom, to imagine that he would not make the vegetable and the animal, as well as the inanimate world, of such sort of workmanship, as might regularly move onward in this manner five or six thousand years; without putting a new hand to it ten thousand times every hour: I say *ten thousand* times every hour; for there is not an hour nor a moment passes, wherein there are not many millions of plants and animals actually forming in the southern or northern climates.[58]

This is not meant to be a statement of deism, but it is rather Wesley's vigorous way of expressing his profound conviction that

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[58] *Survey*, vol. i, p. 372.

God works through secondary causes. For the immanence of God, as quoted above, cannot be expressed in stronger terms than was done by Wesley:

> I believe firmly, and that in the most literal sense, that "without God we can do nothing;" that we cannot think, or speak, or move a hand or an eye, without the concurrence of the divine energy; and that all our natural faculties are God's gifts, nor can the meanest be exerted without the assistance of his Spirit.[59]

Wesley and Darwin were one in regard to secondary causes; and certainly no one could emphasize secondary causes more than Wesley has done in the words quoted above. The difference is in the beginnings. Wesley held that all forms were created in the beginning, and that they were indestructible; Darwin was forced to the position that facts proved that many forms had become extinct, and that new forms seemed to have come into existence, largely through natural selection. It is not remarkable that Wesley held the view he did. Almost every one did in his day. Darwin came to the new view very slowly. We find him writing to J. D. Hooper, in January, 1844, that his experience on the Galapagos Islands caused him to determine "to collect blindly every sort of fact, which could bear any way on what are species." But the dawn is just beginning to break:

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[59] *Works*, vol. vi, p. 634.

> At least gleams of light have come, and I am almost convinced (quite contrary to the opinion I started with) that species are not (it is like confessing a murder) immutable. . . . I think I have found out (here's presumption!) the simple way by which species become exquisitely adapted to various ends. You will groan, and think to yourself, "On what a man have I been wasting my time and writing to!" I should, five years ago, have thought so.[60]

He continues the correspondence, and later in the year only claims:

> In my most sanguine moments all I expect is that I shall be able to show even to sound naturalists that there are two sides to the question of the immutability of species; that facts can be viewed and grouped under the notion of allied species having descended from common stocks.[61]

These words will give us something of an idea the hold the immutability of species had upon the mind of men over a half century after the death of Wesley. Darwin, in his *Autobiography,* says, "I occasionally sounded not a few naturalists, and never happened to come across a single one who seemed to doubt about the permanence of species." As late as 1857 P. H. Gosse, an able naturalist and a keen observer, quoted by Darwin, wrote a book in which he argued that all species were created originally. He even contended in a vigorous manner that the fossil remains were created in that state, and that it could not possibly be otherwise. The law of prochronism in creation is the term he used for his theory.[62]

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[60] Francis Darwin: *Life and Letters of Charles Darwin,* vol. i, p. 384. Reprinted by permission of D. Appleton and Company.

[61] *Ibid.,* vol. i, p. 389. Reprinted by permission of D. Appleton and Company.

If we were to eliminate from Wesley's view of nature this idea of the immutability of species, we would see that his terminology is that of a radical and enthusiastic evolutionist. It will be said, doubtless, that this is giving the drama of Hamlet with Hamlet left out. But let us follow Wesley and see if his position consciously and verbally is the same as it is unconsciously and logically. If we discover that his conscious expression is not always one with what logically follows from his principles, or that he does not see all that his principles involve, then all that can be said is that Wesley is neither the first nor the

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[62] P. H. Gosse: *Omphalos: An Attempt to Untie the Geological Knot,* Preface, vi. pp. 124, 347. London, 1857.

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That John Wesley was, in
evolutionist is being recogn
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[63] Edwin Tenny Brewster: *Creation:*
Evolutionary Theories, p. 81. Reprint
Bobbs-Merrill Company. Indianapolis,

physical scientists of his day
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be highly interesting to com-
ounding physical science in
 of *Natural Philosophy* and
the same subject in his *Notes*
d New Testaments. We will
creation accounts in Genesis.
of creation as he found it in
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eral, vegetable, and animal
under the latter we find the
sects, reptiles, fishes, birds,
e order in Genesis is: Chaos,
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the universe and all creation
it. Then the order is: light,
nd land, vegetation, sun, moon
s, birds, animals, man. There
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nesis until the vegetable king-
In his notes on the first verse
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er: "Genesis," *International Commen-*
esis 1. 2. New York, 1910.

he adds that this is not a complete account of the visible creation: "Yet even in this there are secrets which cannot be fathomed, nor accounted for." In his comment on verse three, he says, *"He made the stars also*—which are here spoken of only in general; for the Scriptures were written not to gratify our curiosity but to lead us to God." Here is a great fundamental principle that would have added immensely to the greatness of Wesley if he had applied it in a thoroughgoing way. This is the only view the cultured person of our day can take toward the Scriptures. As Wesley said, "The Scriptures were written not to gratify our curiosity but to lead us to God." The religious teaching of this first chapter of Genesis is rightly extolled as simple and sublime; God is the One who creates by act of will. It is this teaching in this chapter that has led men to God.

The satisfying of human curiosity is the mission of physical science, of philosophy, and of history. That Wesley so understood is clear from his comment on Genesis 2, 8-15, which is:

> The inspired penman in this history writing for the *Jews* first, and calculating his narratives for the infant state of the church, describes things by their outward sensible appearances, and leaves us, by further discoveries of the divine light, to

be led into the understanding of the mysteries couched under them.

After drawing a moral lesson he continues:

> The *Mosaic* history, as well as the *Mosaic* law, has rather the *patterns* of *heavenly things,* than the *heavenly things themselves.* (Italics are Wesley's.)

When one "describes things by their outward sensible appearances," one is not using scientific description, but is using "simple, concrete, and unscientific narrative." And we cannot see but that Wesley says in these quotations what the most learned modern commentators hold, namely, that we here have "fundamental religious ideas respecting the beginning of things," which, in the words of Wesley, were written "to lead us to God"; but the narrative is neither history nor science.[65] And so S. R. Driver approves Loisy's statement that the science of the Bible is the science of the age in which it was written.[66]

Frankness compels us to admit that Wesley was not always quite consistent in the application of his foundation principle in his attitude toward Scripture—"that the Scriptures were written not to gratify our curiosity but to lead us to God." Yet he never budges on this principle. Even in his comment on the passage in the Second Epistle to Timothy, sixteenth verse, which has always been the classical passage for those who hold to the infallibility of Scripture, and which offered Wesley an excellent opportunity to claim supreme authority for the Scripture in all fields, he, like the apostle, confines himself to the moral and religious ends of Scripture:

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[65] See Herbert E. Ryle, "The Book of Genesis," *Cambridge Bible for Schools and Colleges,* Introduction, p. xxxviii. Cambridge, England, 1914.

[66] See S. R. Driver: "The Book of Genesis," *Westminster Commentaries.* London: Methuen and Company, Ltd. Eighth Edition. 1911. p. 33.

> *All Scripture is inspired of God*—The Spirit of God not only once inspired those who wrote it, but continually inspires, supernaturally assists those that read it with earnest prayer. Hence it is so profitable for doctrine, for instruction of the ignorant, for the reproof or conviction of them that are in error or sin: for the correction or amendment of whatever is amiss, and for instructing or training up the children of God in all righteousness.[67]

But there are passages in the works of Wesley of which candor compels the citation as examples of what seems to be the extension of infallible authority of Scripture over all fields:

> I read Mr. Jenyn's admired tract on the *Internal Evidence of the Christian Religion.* He is

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[67] Wesley: *Explanatory Notes Upon the New Testament.*

> undoubtedly a fine writer, but whether he is a Christian, deist, or atheist I cannot tell. If he is a Christian, he betrays his own cause by averring that "all Scripture is not given by inspiration of God, but the writers of it were sometimes left to themselves, and consequently made some mistakes." Nay, if there be any mistakes in the Bible, there may as well be a thousand. If there be one falsehood in that book, it did not come from the God of truth.[68]

And again:

> Nor is the motion of the earth, whatever is vulgarly supposed, contrary to any part of the Scripture. No other ideas are to be affixed to the words of Scripture, than such as occur to one who looks at the thing spoken of. By the sun's rising, therefore, when mentioned in Scripture, we are to understand no more than the sun's appearing again in the horizon, after he had been hid below it: and by his setting, his ceasing to appear. And when the sun and moon are said to stand still, it means only that they did not change their situation in respects to the earth: that the sun still appeared just *over Gibeon,* and the moon *over the valley of Ajalon.*[69]

It is difficult to understand just what is meant in these words. Apparently, Wesley is claiming, when he says, "Nor is the motion of the earth, whatever is vulgarly supposed, contrary to any part of the Scripture," that the astronomy of the Bible harmonizes with the Copernican system. It is true that he was enthusiastic in his acceptance of the Copernican system as we have quoted him before, in which quotation he said "this great genius deduced a most complete system of astronomy, capable of solving every phenomenon in a satisfactory manner, a system which has been amply confirmed by the discoveries and improvements in astronomy, since that date."[70] It is also true that some have said that he rejected the Copernican system. The only expressions of Wesley that can possibly be construed as rejecting the Copernican system are the following quotations in which are found the words, "I doubt of all systems of astronomy." But this doubt is not meant to include the entire systems; he has in mind only the lack of agreement between different authors as to the distances and sizes of the heavenly bodies. The quotations which follow make this plain:

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[68] *Journal,* vol. vi, p. 117. July 24, 1776.

[69] *Survey,* vol. i, p. 412.

> At the request of the author, I took some pains in correcting an ingenious book, shortly to be published. But the more I consider them, the more I doubt of all systems of astronomy. I doubt whether we can certainly know either the

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[70] *Ibid.*, vol. ii, p. 112.

distance or magnitude of any star in the firmament. Else why do astronomers so immensely differ, even with regard to the distance of the sun from the earth?—some affirming it to be only three, others ninety, millions of miles?[71]

I finished Dr. Rogers' *Essay on the Learning of the Ancients.* I think he has clearly proven that they had microscopes and telescopes, and knew all that is valuable in the modern astronomy; but, indeed, he has fully shown the whole frame of this to be quite uncertain, if not self-contradictory.[72]

This week I wrote an answer to a warm letter, published in *The London Magazine,* the author whereof is much displeased that I presume to doubt of the modern astronomy. I cannot help it. Nay, the more I consider, the more my doubts increase; so that, at present, I doubt whether any man on earth knows the distance or magnitude, I will not say of a fixed star, but of Saturn or Jupiter; yea, of the sun or moon.[73]

Astronomy has made such strides since Wesley's day that such words as his about doubting the results reached by the astronomers of his day seem strange to us. We cannot, however, blame him, for the following quotation reveals disagreements among his contemporary astronomers that seem unbelievable to us. It must be said, on the other hand, in behalf of the astronomers that those of Wesley's day did not have the instruments of such precision as we have; and the spectroscope, by which we discover the constitution of the heavenly bodies, was not invented until after the middle of the nineteenth century. So Wesley could say:

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[71] *Journal,* vol. iv, p. 195. February 10, 1757.

[72] *Ibid.,* p. 210. May 12, 1757.

[73] *Ibid.,* vol. v, p. 104. January 1, 1765.

> Who can tell what is the sun? Its use we know; but who knows of what substance it is composed? Nay, we are not yet able to determine, whether it be fluid or solid! Who knows what is the precise distance of the sun from the earth? Many astronomers are persuaded it is a hundred millions of miles; others, that it is only eighty-six millions, though generally accounted ninety. But equally great men say, it is no more than fifty; some of them, that it is but twelve; last comes Doctor Rogers, and demonstrates that it is just two millions, nine hundred thousand miles! So little do we know of this glorious luminary, the eye and soul of the lower world! And just as much of the planets that surround him; yea, of our own planet, the moon.[74]

It will be noticed that these words are intelligible only on the assumption of the Copernican system. The sun is the center "of the planets that surround him." And it does seem that Wesley felt that the Copernican system was not "contrary to any part of the Scriptures."

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[74] *Sermons,* vol. ii, p. 118. Sermon LXXIV, "The Imperfection of Human Knowledge."

Immediately following this assertion that the motion of the earth is not contrary to any part of the Scripture is a principle of Bible interpretation which is very significant, and practically brings us back to his principle that the Bible was not written to satisfy our curiosity but to lead us to God. The principle is: "No other ideas are to be fixed to the words of Scripture, than such as occur to one who looks at the thing spoken of." This principle we have in the words quoted above, namely, that the inspired penman writing for the Jews first, and for the infant state of the church "describes things by their outward sensible appearances." That is, the writer uses the language of his day. As a matter of fact, he had no other to use. He could not, if he had been so unwise as to so desire, have written in scientific terminology, for he knew nothing of what we understand by science. Wesley's attitude is that the end of inspiration is to get religious truth to men. To do this, natural and historical events are used, just as Christ used parables. We must not try to read our scientific notions into the words of Scripture. Wesley carries this principle as far as to say that, in certain instances, the correction of historical mistakes might be detrimental to the purpose inspiration had in view. The following comment on the genealogy of Christ as found in the Gospels of Matthew and Luke illustrates the principle adopted by Wesley:

> If there were any difficulties in this genealogy, or that given by St. Luke, which could not easily be removed, they would rather affect the Jewish tables than the credit of the evangelists, for they act only as historians setting down these genealogies, as they stood in those public and allowed records. Therefore they were to take them as they found them. Nor was it needful that they should correct the mistakes, if there were any. For these accounts sufficiently answer the end for which they are recited. They unquestionably prove the grand point in view—that Jesus was of the family from which the promised seed was to come. And they had more weight with the Jews for this purpose than if alterations had been made by inspiration itself. For such alterations would have occasioned endless disputes between them and the disciples of our Lord.[75]

Here we have Wesley's principle of the end and method of inspiration. It may shock some mechanically minded men to be told that religious truth may be revealed by statements that are incorrect historically and scientifically, but it took just such a lover of scientific truth and religious truth as Wesley to see that religious truth must be brought to each generation in the ideas and language which each generation understands.

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[75] *Notes Upon the New Testament,* Matthew 1. 1.

Now, to return to the comparison of Wesley's discussions of physical science and the first chapter of Genesis.

The order of creation as it is in Wesley's compendium is, as we have said, the scientific order of Wesley's time, but with evidence we now have such an order would not be considered correct. And Wesley's order corresponds only roughly with that in Genesis, and then only with the creation of animate nature. And Wesley points out that in the language of the creation story, things are "spoken of only in general," not in particular. That is, Wesley understands that the story of creation as it is in Genesis is not written in scientific terminology, not even in the science of its day. He tells us that the writer speaks of things "only in general," with the purpose of leading us to God, and by this he means that "from what we see of heaven and earth, we may infer the eternal power and godhead of the great Creator." And the story certainly appeals to the popular mind in its common-sense terminology; and it accomplishes the end the writer had in view, which was purely religious. And we know that this is Wesley's conception of the purpose of Scripture.[76] And this purpose was realized even when the writers' knowledge of natural or historical events was defective. Indeed, as has been noted, historical exactness might impair the purpose of the religious truth. Such an attitude toward Scripture vacates anything like a claim to infallibility. And Wesley acknowledged this principle as applying not only to natural and historical events but to religious and moral matters. That is, he recognized that the revelation in the Bible was a developing one, and that some things found in the earlier stages should not be used by those who have the fuller revelation in Christ.[77]

We now turn to what we have before promised—to show in just what way Wesley may be considered an evolutionist. From Aristotle to the present, while there have been many differences in detail, the essential idea of evolution has been gradual, orderly, and on the whole, progressive change. Now the terms "gradual progression" and "scale of being" had great charm for Wesley. He says:

> I shall add only one reflection more, with regard

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[76] See comment on Matthew 1. 1, *Notes Upon New Testament.*

[77] The detail discussion of this subject with the evidence will be found in Chapter X, *"Wesley and the Scriptures."*

to the scale of beings. As the microscope discovers almost every drop of water, every blade of grass, every leaf, flower, and grain of earth, to be swarming with inhabitants, a thinking mind is naturally led to consider that part of the scale of beings which descends lower and lower, from himself to the lowest of all sensitive creatures. Among these are so little above dead matter, that it is hard to determine whether they live or no. Others that are lifted one step higher have no sense beside feeling and taste. Some, again, have the additional one of hearing; others of smell, and others of sight.

It is wonderful to observe by what a gradual progression the world of life advances through an immense variety of species before a creature is found that is complete in all its senses. And among these there as so many different degrees of perfection in the senses which one animal enjoys above another that though each sense in different animals comes under some common denomination, yet it seems almost of a different nature. If, after this, we attentively consider the inward endowments of animals, their cunning and sagacity, and what we usually comprehend under the general name of instinct, we find them rising one above another in the same imperceptible manner, and receiving higher and higher improvements, according to the species in which they are implanted.

The whole process of nature is so gradual that the entire chasm from a plant to man is filled

> up with divers kind of creatures, rising one above another, by so gentle ascent that the transitions from one species to another are almost insensible. Now, since the scale of being advances by such regular steps as high as man, is it not probable that it still proceeds gradually upward through beings of a superior nature? As there is an infinitely greater space between the Supreme Being and man, than between man and the lowest insect.[78]

Then he quotes from Mr. Locke, with approval, the following:

> That there should be more species of intelligent creatures above us than there are sensible and material below us is probable, from hence, that in all the visible and corporeal world, we see no chasm, no gaps. All quite down from man the descent is by easy steps: there is a continued series of things that in each remove differ the least that can be conceived from each other. There are fishes that have wings, and are not strangers to the airy regions. And there are birds which are inhabitants of the waters, whose blood is as cold as that of fishes. There are animals so near akin both to birds and beasts that they are in the middle between both. Amphibious animals link the terrestrial and aquatic together. Seals live either on land or in the sea. Porpoises have the warm blood and entrails of a hog. There are brutes that seem to have as much knowledge

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[78] *Survey,* vol. ii, p. 185.

and reason as some that are called men. Again: the animal and vegetable kingdoms are so closely joined, that between the lowest of the one and the highest of the other there is scarce any perceptible difference. And if we go on till we come to the lowest and most inorganical parts of matter, we shall find everywhere that the several species are linked together and differ in almost insensible degrees.

Now when we consider, on the other hand, the infinite power and wisdom of the Creator, does it not appear highly suitable to the magnificent harmony of the universe and the infinite goodness of the Architect that the species of creatures should also by gentle degrees ascend upward from us, as they gradually descend from us downward, toward his infinite perfection? It is not necessary to creating power, that the receptacle of the soul should be a ponderous body, consisting of flesh and blood; if it consisted with infinite wisdom, the power which organized the human body, and ordained it a receptacle for an intelligent soul, could also prepare a body of rarer materials, which should be as light as ether, and capable of traversing rarer regions, with the velocity of light. And it only betrays a feebleness of mind to suppose, that there are no more and no other kind of intelligent beings in the universe besides what inhabit this little globe of ours.[79]

That "scale of beings" and "gradual progression" of beings "should also, by gentle degrees, ascend upward from us, as they gradually descend from us downward," should be cordially accepted by Wesley, puts him, as far as the essential idea of evolution is concerned, in the class of the most ardent evolutionists. He draws into his conception the entire creation. The Creator alone is outside the scale of beings. To use the words which he translates from Bonnet and makes his own:

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[79] *Survey,* vol. ii, p. 186; Locke, *An Essay Concerning Human Understanding,* bk. iii, chap. vi, sec 12.

> The spheres thus enlarging themselves more and more, this amazing progression rises by degrees from the vortex of amber to the solar vortex; from the sphere of a mite to that of an angel.[80] Between the lowest and the highest degree of corporeal and spiritual perfection there is an almost infinite number of intermediate degrees. The result of these degrees composes the universal chain. This unites all beings, connects all worlds, comprehends all the spheres. One Sole Being is out of this chain, and that is he that made it.[81]

Wesley holds tenaciously to what he terms "the admirable gradation there is among all beings." And as we have seen, this means gradation from amber to the solar system in the inanimate creation, and in the animate from the mite to the angel. He admits that he could not bridge the chasm between the mineral and the vegetable kingdoms; but he has faith that some day it will be done. His words, translating from Bonnet, are:

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[80] *Ibid.*, vol. ii, p. 192. Bonnet, *Contemplation de la Nature*, vol. i, p. 17.

[81] *Ibid.*, vol. ii, p. 194; Bonnet, *Ibid.*, vol. i, p. 26.

> The vacancy we suppose left between the vegetable and mineral will in all probability be one day supplied. There was a similar void betwixt the animal and vegetable: the polypus now fills it up, and sets in a conspicuous light the admirable gradation there is among all beings.[82]

Some might think that Wesley's position suggests abiogenesis, spontaneous generation, the production of living from non-living matter. This may be true. Or it may be that the problem did not enter Wesley's mind. Pasteur's negativing spontaneous generation in his brilliant and decisive way has caused us to be unmindful of what Huxley pointed out, namely, that spontaneous generation was not challenged by either scientist or theologian until the experiments of Francesco Redi (1626-1698).[83] And Wesley may have held, as did a great modern thinker:

> Even if so-called spontaneous generation proved to be a fact, it would mean that living things may arise under other phenomenal conditions than

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[82] *Survey,* vol. ii, p. 266. Bonnet, *Ibid.,* vol. i, p. 232.

[83] Presidential Address, British Association for the Advancement of Science, 1870.

those that generally obtain; it would not mean that "material causes" are able of themselves to produce living beings.[84]

Osborn claims, however, that "as a spurious naturalistic explanation, it [the doctrine of spontaneous generation] was one of the greatest impediments to the growth of the true evolutionist idea."[85] It would not have bothered Wesley in holding the evolutionary idea, for his position was exactly that of Doctor Bowne, namely, that God is the source of all things, and, no matter under what conditions life arose, God was the Creator of it. This is why, in spite of lack of knowledge, he holds to the faith that there is a transition from the inorganic to the organic. And when he uses the words, "the vacancy we suppose left between the vegetable and the mineral," he wishes to impress his readers with the fact that the supposition is not proof that such vacancy actually exists. Having said this, he has no trouble in making the transitions from plants through the ascending scale of the animal kingdom up to man.

The transition from the vegetable to the animal kingdom, he finds, following Bonnet, to be made by the sensitive plant and the polypus.[86] After reaching the animal kingdom Wesley seems to take increasing delight in discovering the transitions from one form of living creature to another. Beginning with the polypus, which is the transition to worms,[87] from them the passage is to insects.[88] Worms "constitute the connection between insects and shellfish.[89] Reptiles come next, "being united to shelled animals by the slug, and to fishes by the water-serpent," and "the eel by its formation, and creeping fishes by their method of moving, connect fishes with the water-serpent.[90] The transition from fish to birds is supplied by the flying fish.[91] The transition from birds to quadrupeds is reached as follows:

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[84] B. P. Bowne, *Personalism,* p. 236.

[85] Henry Fairfield Osborn, *From the Greeks to Darwin,* p. 28. Reprinted by permission of Charles Scribner's Sons.

> Hairy birds having projecting ears, a mouth furnished with teeth, and whose body is carried on four paws armed with claws—are they birds in reality? Are quadrupeds, that fly by the assistance of great membranous wings, really such? The bat and flying squirrel—are these strange animals, which are so proper for establishing the

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[86] *Survey,* vol. ii, pp. 201-202; Bonnet, *Contemplation de la Nature,* vol. i, pp. 45-48.

[87] *Ibid.,* vol. ii, p. 204; Bonnet, *Ibid.,* vol. i, p. 52.

[88] *Ibid.,* vol. ii, p. 204; Bonnet, *Ibid.,* vol. i, p. 53.

[89] *Ibid.,* vol. ii, p. 192; Bonnet, *Contemplation de la Nature,* vol. i, p. 58.

[90] *Ibid.,* vol. ii, p. 208; Bonnet, *Ibid.,* vol. i, pp. 63, 64.

[91] *Ibid.,* vol. ii, p. 209; Bonnet, *Ibid.,* vol. i, p. 66.

> gradation that subsists between all the productions of nature? The ostrich with the feet of a goat, which runs rather than flies, seems to be another link which unites birds to quadrupeds.[92]

After describing the classes of quadrupeds, he says: "At the summit of the scale of our globe is placed man, the masterpiece of earth creation." And he asks:

> By what degrees does nature raise herself up to man?
>
> How will she rectify this head that is always inclined towards the earth? How change these paws into flexible arms? What method will she make use of to transform these crooked feet into supple and skillful hands? Or how will she widen and extend this contracted stomach? In what manner will she place the breasts, and give them a roundness suitable to them?
>
> The ape is this rough draught of man: this rude sketch, an imperfect representation, which nevertheless bears resemblance to him, and is the last creature that serves to display the admirable progression of the works of God.[93]

That Wesley was an evolutionist in the sense which is essential to the idea of evolution is now plain. Gradual progression, or gradual change, seemed to obsess him. Throughout the *Survey* he never misses an opportunity to point out examples of his gradual progression by insensible degrees. This is true in the first two volumes which were written before Bonnet's *Contemplation de la Nature* was published. After he read it he found that he had an able naturalist who in science and religion was a man after his own heart, just as in Mr. Locke he found such a philosopher.[94] So he looked upon Bonnet's treatise as "that beautiful work" which he finally decided "to give an abridgment of the whole, that the admirable chain of reasoning may be preserved, and the adorable wisdom and goodness of the great Author of nature, placed in the strongest light."

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[92] *Ibid.,* vol. ii, p. 209; Bonnet, *Ibid.,* vol. i, p. 67.

[93] *Ibid.,* vol. ii, p. 210; Bonnet, *Ibid.,* vol. i, p. 69.

Wesley quoted Locke because in his chain of being there were "no chasm, no gaps," but everything was in a scale of being in which things ascended or descended by "gentle degrees" and by "almost insensible degrees." And he found exactly the same conception in Bonnet's scale of being. And when we turn to Wesley's *Explanatory Notes Upon the Old Testament,* 1765, and his *Explanatory Notes Upon the New Testament,* 1755, we see that he finds evidence of "gradual progression" as the method God uses in creation and in providence.

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[94] *Survey,* vol. ii, p. 186; John Locke: *An Essay Concerning Human Understanding,* bk. iii, chap. vi, par. 12.

Where Wesley differs in his idea, which we call evolution, from the modern view is that all species were created in the beginning, and a species is indestructible, and he thus eliminates the time element. This is what we find in the *Survey:*

> God, in creating the first individual of each species, animal or vegetable, not only gave a form to the dust of the earth but a principle of life, inclosing in each a greater or smaller quantity of original particles indestructible and common to all organized beings. . . . If death is permitted to cut down individuals, it is only in order to make of the universe by the reproduction of beings a theater ever crowded, a spectacle ever new. But it is never permitted to destroy the most inconsiderable species.[95] So on Genesis 2. 1, 2, 3, preserving and governing all the creatures, yet he doth not make any new species of creatures.

He finds that Bonnet agrees with him, if not in the indestructibleness of species, at least in their immutability. This is how he expresses his view:

> From the immutability of species amidst the perpetual motion that reigns in the universe is deducted the indivisibility of the first principles of bodies; and the indivisibility of these principles would demonstrate the simplicity of their

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[95] *Ibid.,* vol. i, p. 304.

> nature, if God had not power to render the highly compound particles, incapable of separation.[96]

We would have not the slightest trouble in identifying the evolutionary language of Wesley with that of modern evolutionists if it were not for his belief in the immutability of species. But this idea was held by practically all naturalists down to Darwin's time, as we have seen Darwin himself testifies. Yet the time element enters into Wesley's "admirable gradation there is among all things." He holds that all species were created in the beginning, and we find what he means by this phrase by examining his comment on the creation account in the first chapter of Genesis. "*In the beginning*—That is, in the beginning of time. Time began with the production of those things that are measured by time." Now Wesley begins to see that the method of evolution, or, to use his favorite phrase, gradual progression, holds in revelation as well as in nature. He says:

> The Creator could have made his work perfect at first, but by this *gradual* [italics are Wesley's] proceeding he would show what is ordinarily the method of his providence and grace.[97]

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[96] *Survey*, vol. ii, p. 195; Bonnet, *Contemplation de la Nature*, vol. i, p. 31.

[97] Wesley: *Explanatory Notes Upon Old Testament*, Genesis 1. 2.

As an example of this method in grace we find in his comments on Matt. 1. 9:

> Throughout this whole discourse [the Sermon on the Mount] we cannot but observe the most exact method which can possibly be conceived. Every paragraph, every sentence, is closely connected both with that which precedes, and that which follows it. And is not this the pattern for every Christian preacher? If any, then, are able to follow it without premeditation, well; if not, let them not dare to preach without it. No rhapsody, no incoherency, whether the things spoken be true or false, comes of the Spirit of Christ.[98]

In providence or grace, in the physical creation or in religious inspiration, the Method, as Wesley sees it, is that of evolution or gradual progression. His comment on the fifth day of creation is:

> V. 20, 21, 22, 23, Each day hitherto hath produced very excellent things, but we do not read of the creation of any living *creature* till the *fifth day.* The work of creation not only proceeded gradually from one thing to another, but advanced gradually from that which was less excellent to that which was more so; 'twas on the fifth day that the fish and fowl were created, and both out of the waters.[99]

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[98] Wesley: *Explanatory Notes Upon the New Testament,* Matthew 1. 9.

[99] Wesley: *Explanatory Notes Upon the Old Testament,* Genesis 1. 20-23.

Man was created last because all things were created for his sake. As Wesley said in his *Survey,* man is "the lord of creation,"[100] and because "the creation was to advance from that which was less perfect, to that which was more so." God could have created all things and all species "in an instant," but he extended the creation over six days, and in a rising scale of perfection until he reached man, "the lord of creation," "that he might show himself a free agent, doing his own work, both in his own way, and in his own time; that his wisdom, power, and goodness, might appear to us, and be meditated upon by us, the more distinctly; and that he might set us an example of working six days and resting the seventh."[101]

In his comments on the account of creation found in the second chapter of Genesis, he explains the use of the word "formed" in place of "created" or "made" in relation to man, because it "notes a gradual process in the work with great accuracy and exactness." And throughout his comments upon Scripture, whether of the Old or New Testament, he seldom misses any opportunity to express the idea of "the admirable gradation there is among all things." So he says that John the Baptist and Christ "gradually taught the Jews." (Matt. 3. 2.) In Matt. 4. 16, he finds "a beautiful gradation: first, *they walked, then they sat in darkness,* and, lastly, *in the region of the shadow of death.*" And of Luke 4. 18 he says, "Here is a beautiful gradation—*To proclaim deliverance to the captives, and recovery of sight to the blind, to set at liberty them that are bruised.*"[102] Again his comment on a section of the sixth chapter of St. John's Gospel: "52. Observe the degrees: the Jews are tried first; the disciples, ver. 60-66, the apostles, ver. 67."

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[100] *Survey,* vol. i, p. 377.

[101] Wesley: *Explanatory Notes Upon the Old Testament,* Genesis 1. 31.

As we try to trace the essential element in the idea of evolution from Empedocles (490–430 B. C.), who, as Osborn, as has been quoted before, says, "may justly be called the father of the evolution idea," to the present time, we find it to be continuous, gradual, orderly, and on the whole, progressive change. Aristotle constructed a scale of being which was adapted by Bonnet, and this is the scale that Wesley makes his own in his *Survey.* Augustine has dominated the Western church, Roman Catholic and Protestant, more than any single church Father; and, according to Aubrey Moore, "Augustine distinctly rejected special creation in favor of a doctrine which, without any violence of language, we may call a theory of evolution."[103] Osborn, who has a right to speak with authority on the history of the evolution theory, approves of this and says:

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[102] Wesley's *Explanatory Notes Upon the New Testament.*

> The truth is that all classes of theologians departed from the original philosophical and scientific standards of some of the Fathers of the church, and that special creation became the universal teaching from the middle of the sixteenth to the middle of the nineteenth century. It is the recent establishment of evolution which has led to the revival of Augustine's broad and true interpretation.[104]

And Osborn states that the principle of natural causation and that of evolution were under the band, not of orthodoxy, but of unorthodoxy.[105] And we must not forget that such orthodox Christians as Francis Bacon and John Locke vigorously advocated the essential idea of evolution. Wesley quotes Locke with earnest delight.[106]

The broader the learning, the profounder the thought, and the richer the experience of a man the better able is he to see and to appreciate the positive contributions of the seekers after truth. Wesley was not by profession a physical scientist, although physical science had a fascination for him that he controlled with difficulty; nor was he an evolutionist in the Darwinian sense; but that he was an evolutionist in the essential idea of the method we do not believe can be successfully challenged. We appreciate the positive element in Wesley, and his broad spirit that caused him to see the important place physical science has in the life of humanity as increasing its material comforts and in its cultural advancement. Never do we find a word in all of Wesley's writings that even remotely suggests the abridging the freedom of investigation in physical science, or, indeed, in any department of learning. He reveals no hint of the supposed dangers threatening the student of physical science that even Goethe seems to harbor:

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[103] Henry Fairfield Osborn, *From the Greeks to Darwin,* p. 72. Reprinted by permission of Charles Scribner's Sons.

[104] *Ibid.,* p. 85. Reprinted by permission of Charles Scribner's Sons.

[105] *Ibid.,* p. 90. Reprinted by permission of Charles Scribner's Sons.

[106] *Survey,* vol. ii, p. 186; John Locke: *An Essay Concerning Human Understanding,* bk. iii, chap. vi, par. 12.

"He who would study organic existence,
First drives out the soul with rigid persistence;
Then the parts in his hand he may hold and class,
But the spiritual link is lost, alas!"[107]

That there has been and are such Mephistopheles among scientists, as the character who speaks these words, it would be futile to deny; but, as a matter of fact, among the scientists of the first rank, from Aristotle to the present, they have been very rare. And it is interesting to note that, as for Wesley, so for the scientists of this class, evolution, in one form or another, has always had a peculiar charm for them. It may be that one reason is that the idea of evolution is saturated with order and purpose; and these always involved the spiritual factor.

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[107] Goethe: *Faust.* Bayard Taylor's Translation, part i, scene iv.

CHAPTER VIII

THE SCIENTIFIC INSIGHT OF WESLEY

We have noted at some length the enthusiasm of Wesley over the discoveries arising out of Benjamin Franklin's experiments in electricity, and the theoretical conclusions Wesley claimed that Franklin had made clear. And we mentioned the insight of Wesley as he looked into the future trying to dream of the unimaginable field that was opening up for future investigators to explore. This is one of the many examples of the clear mental vision of Wesley revealed in his *Survey of Natural Philosophy.* It cannot be said that his vision is always confirmed by future developments, and some things he considered impossible have triumphantly come to pass. Nevertheless in some things he manifests remarkable insight, anticipating the great body of scientists by a century.

We have told the story of Wesley's superior insight to that of the members of the Royal Society in grasping the great significance of Franklin's experiments in electricity. And we have pointed out that he clearly distinguished the fields of physical science and philosophy, as we do to-day, confining the former to that which "appears in nature," while the province of the latter is to seek "the cause of those appearances." In this he anticipated Karl Pearson by one hundred and twenty-nine years.

One of the most interesting examples of Wesley's scientific insight is his early recognition of heat as a mode of motion. And one of the strangest things in the history of science is the persistency with which the general body of scientists ignored the experiments of some of their greatest leaders who gave abundant evidence that heat is, as Wesley said, "nothing but motion." His words in full are:

> Heat seems to be nothing but motion: but this motion has some peculiar circumstances. 1. It is expansive motion, whereby a body endeavors to dilate itself. 2. This motion is upward, and toward the circumference. 3. It is not an equable motion of the whole, but only of the smaller particles of the body. 4. It is a rapid motion. Heat may therefore be defined as expansive, undulatory motion in the minute particles of a body, whereby they rapidly tend to the circumference, and at the same time upward.[1]

These words were in the first edition of his *Survey of Natural Philosophy,* 1763. Yet as late as 1848 we find in one of the best and, we believe, one of the most elaborate handbooks on chemistry of that day, heat defined as a material substance:

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[1] *Survey,* vol. ii, p. 4.

> Heat or calorie, is that substance whose entrance into our bodies is supposed to occasion the sensation of warmth or heat, and its egress the sensation of cold. It is invisible, without weight, very elastic, radiates with great velocity.[2]

It seems amazing that such a definition of heat should be given in a great handbook on chemistry when the definition given by Wesley eighty-five years before was hinted as far back as Plato, and asserted by at least a dozen outstanding scientists before the middle of the nineteenth century, and that it was not until Tyndall delivered his lectures on "Heat as a Mode of Motion" in 1862 that the great body of scientists adopted the mechanical view.

Plato puts into the mouth of Socrates: "For heat and fire which generates and sustains other things, are themselves begotten by impact and friction: but this is motion."[3]

When we come to Francis Bacon, we have nothing less than a perfectly clear statement that heat is motion:

> When I say of motion that it is as the genus of which heat is the species, I would be under-

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[2] Leopold Gmelin, *Hand-Book of Chemistry*, vol. i, p. 212. London, 1848.

[3] Plato's *Works*, vol. i, p. 382. Bohn Edition.

> stood to mean, not that heat generates motion or that motion generates heat (though both are true in certain cases), but that heat itself, in essence and quiddity, is motion and nothing else, limited however by the specific differences which I will presently subjoin, as soon as I have added a few cautions for the sake of avoiding ambiguity.[4]

Tyndall says:

> Descartes and others in his day had a clear conception that the sensation of heat arose from a kind of motion communicated to the nerves, and some of the earlier writers were also clear as to the fact that the sensation was derived from the molecular motion of the warm body.[5]

Thomas Hobbes, a contemporary of both Bacon and Descartes, wrote, "Motion is the cause of heat."[6] And he gives a number of pages to the discussion of the subject.[7]

Robert Boyle said, "It is Bacon among moderns that has first handled the doctrine of heat like an experimental philosopher." Boyle held that heat was the product of mechanical means, recording twenty-seven experiments by which he convinced himself that heat is thus produced.[8]

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[4] New Organum, Aphorism XX, Bacon's *Works,* Ed. by Spedding, 1900.

[5] John Tyndall: *Heat as a Mode of Motion,* p. 34.

[6] *Works* of Thomas Hobbes. Ed. by Molesworth, 1839. Vol. vii, p. 122.

[7] *Ibid.,* vol. i, p. 459; vol. vii, pp. 25, 26, 118.

Locke had not the slightest doubt of the mechanical origin of heat. He claimed that heat was nothing but motion.[9] And in a work published after his death, and which is not very well known, we find these words:

> Heat is a very brisk agitation of the insensible parts of the object which produces in us that sensation from whence we denominate the object hot; so what in our sensation is heat in the object is nothing but motion. This appears by the way whereby heat is produced; for we see that the rubbing of a brass nail upon a board will make it very hot; and the axle-trees of carts and coaches are often hot, and sometimes to a degree, that it sets them on fire, by rubbing of the nave of the wheel upon it.[10]

The next scientist of great eminence who experimented with the purpose of discovering the nature of heat, and whose conclusion was that "in rubbing motions" we have heat, is Robert Hooke. Discussing heat he says:

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[8] *Works* of the Hon. Robert Boyle, vol. iv, p. 244. 1772.

[9] *An Essay Concerning Human Understanding,* bk. ii, chap. viii, par. 21.

[10] *A Collection of Several Pieces of Mr. John Locke.* Never before printed, or not extant in his works. London, 1720. *Elements of Natural Philosophy,* pp. 224, 225; *An Essay Concerning Human Understanding,* vol. ii, p. 438. Twentieth Edition, London, 1796.

> What is the cause of fluidness? This I conceive to be nothing else but a certain pulse or shake of heat; for heat being nothing else but a very brisk and vehement agitation of the parts of a body.
>
> Now heat, as I shall afterward prove, is nothing but internal motion of particles of body, and the hotter a body is, the more violent are the particles moved, and with a quick motion; but the particles of bodies according as they are moved bulky and close, so do they require the greater degrees of motion propagated from body to body.[11]

Sir Isaac Newton died when Wesley was twenty-four years of age, and he is the last great scientist who wrote before Wesley that heat is motion. It may be found stated incidentally in Newton's discussion of the nature of light:

> A dense fluid can be of no use for explaining the phenomena of nature, the motions of the planets and comets being better explained without it. It serves only to disturb and retard the motions of those great bodies and make the frame of nature languish; and in the pores of bodies it serves only to stop the vibrating motion of their parts, wherein heat and activity consists. And as it is of no use and hinders the operations of nature and makes her languish, so there is no

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[11] *The Posthumous Works* of Robert Hooke, pp. 48-51, 116. London, 1705.

evidence for its existence, and therefore it ought to be rejected. And if it be rejected, the hypotheses of light consists in pression or motion propagated through such a medium are rejected with it.[12]

Just to what extent Wesley was acquainted with what these great investigators of motion, light, and heat had done it is impossible to tell; but he knew the work of enough of them to be impressed with the evidence for the conclusion that heat is "nothing but motion." And Wesley's insight seems the more remarkable when we recall that it took the investigations of such scientists as Count Rumford, Sir Humphry Davy, Thomas Young, Sadi Carnot, and Joule, covering a period of over a half century after the death of Wesley, before the theory that heat is a mode of motion received general acceptance among scientists.

We have in a former chapter told of his interest in animal psychology to which some are to-day looking so longingly for the light they expect it to cast on human psychology. And just here we may recall his adopting Bonnet's suggestion of a psychometer by which he presumed that "at one time or another we shall be enabled to measure spirits as we now do bodies." And he was so awake to the power of the psychology of suggestion that some of his observations would be highly pleasing to the suggestionist, the disciples of Coué, and the followers of New Thought. He says:

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[12] Sir Isaac Newton: *Optics*, p. 343. Second Edition, London, 1718.

> I spoke severally to the members of the society. I found far more life among them than I expected. Near one half of the sixty (that was the number of those that remained) I judged to be real believers. What a mischievous injustice it is to represent all this people as dead! It has weakened the hands of the preachers much, and has greatly discouraged the people. The continually telling people they are dead is the ready way to make them so.[13]

Wesley here states negatively what is the very quintessence of his philosophy of life. Those who made the report to him that all the members of this society were dead spiritually had missed entirely Wesley's conception of the religion of Christ. And they were guilty not only of an injustice to these people, but a mischievous injustice, retarding the work of the preachers and the development of those they were endeavoring to help. But this is the stock in trade of all those who substitute theology for religion; or who make their religion depend upon their theology instead of making their theology depend upon their religion.

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[13] *Journal,* vol. v, p. 418. June 13, 1771.

Wesley's attitude was quite the reverse. He was keen enough to see that all of our reasoning is determined by our attitude toward life. And even in his *Earnest Appeal to Men of Reason and Religion,* in which he exalts reason in the strongest terms, and urges all to use all the reason God has given them in searching out the things of religion, he places the attitude of love back of reason to give it true insight. By religion he meant to love God with man's entire being, "and the loving every soul which God hath made, every man on earth, as our own soul." It was his sympathy for the humble people in this particular society which gave him the insight expressed in the words, "The continually telling people that they are dead is the ready way to make them so." This idea stated positively has become a mighty force in the development of men with modern psychologists of several schools; in fact, the idea stated by Wesley has been developed into a science. And this insight experienced by him is an illustration of what two later writers have said: "The affirmative of affirmatives is love. As much love, so much perception. . . . Good will makes insight."[14] The same thought is expressed by a German writer who makes the secret of genius love. He says love makes of man a clairvoyant, a seer, a diviner of hidden things.[15]

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[14] Ralph Waldo Emerson: *Success.*

The above are enough examples of the insight of Wesley into scientific ideas which have been realized. But there is another side. His insight sometimes fails him; and we are surprised to find him denying the possibility of some things that are present-day accomplishments. His reason for holding the attempts of men to fly to be "void and vain," is uncommonly weak coming from such a good logician as Wesley. In describing the means by which a bird flies he says:

> It is by the largeness and strength of the pectoral muscles that they are qualified for flying. In men these are scarce a seventeenth part of the muscles of the body. In birds they considerably outweigh all the other muscles together. And this circumstance alone, the want of suitable muscles, makes all human attempts to fly void and vain.

This does not seem like Wesley, and he himself deprives it of any possible force it might seem to have by actually quoting no less an investigator than Roger Bacon as stating that a man did fly successfully in a machine:

> Nevertheless the art of flying has been seriously attempted by many, in various ages, particularly

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[15] See Hermann Tuerck: *The Man of Genius.* English Edition, p. 2. London, 1914.

in the time of Friar Bacon, who lived about five hundred years since, and whom his excellent works show to have been a rare chemist, an excellent mathematician, a knowing mechanic, and a most accomplished experimental philosopher. Yet even *he* believed the art of flying possible, and says, he himself knew how to make an engine, in which a man sitting, might be able to convey himself through the air like a bird. Nay, he affirms, that there was then another person, who had actually tried it with success.[16]

This is one of the strangest passages we have ever seen in Wesley's writings. He has very high regard for Roger Bacon, both as an experimental philosopher and as a man of character. Yet he rejects his plain statement of fact, and he does so on a single ground, and that not at all germane to the subject.

But we cannot expect too much of Wesley, who was not a trained scientist, writing in 1763, when a very great scientist writing in 1906 took the same attitude. Professor Simon Newcomb wrote:

> All should admit that if any hope for the flying machine can be entertained, it must be based more on general faith in what mankind is going to do than upon reasoning or experience.

And his conclusion was:

> The demonstration that no possible combina-

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[16] *Survey,* vol. i, p. 161.

> tion of known substances, known forms of machinery, and known forms of force can be united in a practical machine by which men shall fly long distances through the air, seems to the writer as complete as it is possible for the demonstration of any physical fact to be.[17]

Three years before Professor Newcomb wrote his decisive words, Professor Langley had actually solved the problem. It was a mere accident that delayed the demonstration until 1914. And six months after the above article was written the Wright machine had demonstrated that the flying-machine was an accomplished fact. And what Doctor Newcomb said, "the most imaginative inventor" had not put on paper a successful method of a flying-machine making a safe landing, has been accomplished with machines weighing over ten thousand pounds.

He has some fun over the suggestion of Alexander Graham Bell, who always took a hopeful view of things:

> Doctor Graham Bell, with a cheery optimism very pleasant to contemplate, has pointed out that the law I have just cited may be evaded by not making a large machine on the same model, but changing the latter in a way tantamount to increasing the number of small machines. This

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[17] Simon Newcomb: *Side-Lights on Astronomy*, pp. 344, 345. Reprinted by permission of Harper and Brothers.

is quite true, and I wish it understood that, in laying down the law I have cited, I limit it to two machines of different sizes on the same model throughout. Quite likely the most effective flying-machine would be one carried by a vast number of little birds.

Both of these great men have passed from the earthly existence, but the man with the "cheery optimism very pleasant to contemplate," has had his cheery optimism fully justified by the wonderful accomplishments of the flying machine. Wesley, Newcomb, and Bell were great men. But it must be remembered that great men are not infallible, and when a great man makes a mistake it all too often is a great mistake.

Another example of the failure of Wesley's insight was his belief in witchcraft. And he stated his belief in words that cannot be misunderstood. A young woman had a strange case of convulsions. Wesley reports it in detail and adds:

> When old Doctor Alexander was asked what her disorder was, he answered, "It is what formerly they would have called being bewitched." And why should they not call it so now? Because the infidels have hooted witchcraft out of the world; and the complaisant Christians, in large numbers have joined with them in the cry. I do not so much wonder at this—that many of these

> should herein talk like infidels. But I have sometimes been inclined to wonder at the pert, saucy, indecent manner wherein some of those trample upon men far wiser than themselves; at their speaking so dogmatically against what not only the whole world, heathen and Christian, believed in past ages, but thousands, learned and unlearned, firmly believe at this day. I instance Doctor Smollett and Mr. Guthrie, whose manner of speaking concerning witchcraft must be extremely offensive to every sensible man who cannot give up his Bible.[18]

He reads a book by "a lively as well as a judicious writer." Then he observes:

> Judicious, I mean, in most respects; but I cannot give up to all the deists in Great Britain the existence of witchcraft till I give up the credit of all history, sacred and profane. And at the present time I have not only as strong, but stronger proofs of this, from eye and ear witnesses, than I have of murder; so that I cannot rationally doubt of one any more than the other.[19]

It would seem that the case for witchcraft could not be put stronger than Wesley has done in these two items taken from his *Journal.* But we believe the following is really a stronger protest:

> With my latest breath will I bear testimony

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[18] *Journal,* vol. v, p. 375. July 2-3, 1770.

[19] *Ibid.,* vol. vi, p. 109. May 23, 1776.

> against giving up to infidels one great proof of the invisible world; I mean, that of witchcraft and apparitions, confirmed by the testimony of all ages. I do not think any unprejudiced man can doubt of the truth of the following narrative. The truth of it was in the last century acknowledged by all Europe; against which, the unaccountableness of it is no objection to those who are convinced of the littleness of their own knowledge.[20]

Witches have long passed out of our mental atmosphere. They have gone to the limbo of fairies and goblins. So we are inclined complacently to look upon Wesley and wonder at his credulity. But while we are fully justified in rejecting witchcraft we are not justified in considering those who believed in it in former times as credulous. My friend, Dr. Edwin E. Slosson, director of Science Service, has sent me a quotation from the great legal light Sir William Blackstone, a contemporary of Wesley, as he found it in a late work on the subject of witchcraft. Blackstone plainly said that to deny the possibility in fact, the actual existence of witchcraft was to contradict "various passages both of the Old and New Testaments"; that witchcraft was a thing to the truth of which every nation in the world had "in its turn borne testimony."[21]

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[20] Preface to *A True Relation of the Chief Things Which an Evil Spirit Did and Said at Mascon, in Burgundy. Works,* vol. vii, p. 571.

Note that Blackstone agrees with Wesley that the Old and New Testaments and every nation in the world have testified to the reality of witchcraft. The latest, and as scholarly a work as was ever written on the subject of witchcraft, says it is "a subject as old as the world and as wide as the world."[22]

The author gives abundant examples, and holds that the evidence is such that many of these cannot be explained by hallucination or legerdemain; and later states that "there is no other way of accounting for these save by acknowledging the reality of witchcraft and diabolic contacts."[23] These words are from a scholarly volume issued in the year 1926. As with this writer so with Wesley. He examined the evidence and concluded that his reason would not allow him to deny the truth of witchcraft. Nor did Wesley examine the evidence carelessly or uncritically. Lecky says that Glanvil's *Sadducismus Triumphatus* "is probably the ablest book ever published in defense of the superstition of witchcraft."[24] Wesley read this work and comments:

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[21] See Summers: *The History of Witchcraft and Demonology;* Blackstone: *Commentaries on the Laws of England,* Oxford. Printed at the Clarendon Press, 1765-69. Vol. iv, p. 60.

[22] Montague Summers, *The History of Witchcraft and Demonology,* p. vii.

[23] *Ibid.,* p. 64.

> But some of his relations I cannot conceive; and much less his way of accounting for them. All his talk about "aerial and astral spirits" I take to be stark nonsense. Indeed, supposing the facts true, I wonder a man of sense should account for them at all. For who can explain the things of the invisible world but the inhabitants of it?[25]

Lecky claimed that the belief in witchcraft was not overthrown by argumentation, but by the general spread of the spirit of rationalism. Lecky meant by rationalism just what Wesley meant, as we shall see in the next chapter, making one's reason the final authority. Wesley lived when that spirit had not the ascendency in the church that it has today. But in this matter of witchcraft Wesley was in good company. Lecky names about thirty of the leading men of Europe from Saint Augustine to Sir Matthew Hale, and among them some of the most powerful intellects, who believed in witchcraft. It is our opinion, however, that the most potent factor in holding Wesley to the belief in witchcraft was that he believed the Bible taught that it was a reality. It cannot be said, however, that it was the only factor. Wesley was true to the spirit of science in investigating alleged cases of witchcraft. As we have seen, he questioned accounts, and rejected explanations of accounts of witchcraft as given in Glanvil's book, which Lecky considered the ablest work ever written on the subject, and insisted that the evidence for the particular cases was such that his reason would allow no other cause than that the subjects were bewitched. This was in 1776; and Montague Summers in 1926, one hundred and fifty years later, in his very able and scholarly work, comes, as we have seen, to the same conclusion. This does not mean that Wesley was right; it means that we cannot cavalierly dispose of Wesley's conviction of the truth of witchcraft on the ground of credulity. He meant to be loyal to his scientific insight; but that insight was dimmed because of the lack of our investigations of psychical phenomena and our more reasonable view of the inspiration of the Scriptures.

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[24] W. E. H. Lecky: *Rationalism in Europe,* vol. i. p. 133. New York, 1870.

[25] *Journal,* vol. v, p. 311, April 8, 1769.

Wesley had remarkable scientific insight, but it was not infallible. He missed it sometimes. The flying-machine is the best example of its failing him; and we consider that his holding to witchcraft is another such example, although there is more justification for it.

CHAPTER IX

THE PRINCIPLE OF AUTHORITY AS UNDERSTOOD BY WESLEY

ARTHUR J. BALFOUR some years ago claimed that it is the ability of men to accept authority rather than the possession of reason that distinguishes them from the lower animals.[1] This is true, however, only for one of the two distinct ways of accepting authority. We may bow to the commands of a person as does the slave to his owner, or as a domesticated animal, such as a horse or a dog does to his master. This kind of submission certainly does not distinguish us from the lower animals. It rather dehumanizes us. Then there is the submission to the authority of one who by fear or some peculiar influence overawes us. This is committing intellectual suicide. These illustrations are examples of the dethronement of one's judgment, that is, one's reason; and places one on the animal plane.

When the people of a community submit to its laws they are bowing to authority in an entirely different way from the cases just described. The very fact that they dwell in the community is taken as evidence that they agree to obey the laws of that community. They believe that the laws are reasonable, or they would try to change them, or they would leave the community. The fact that they remain in the community means that their judgment, their reason, approves of the laws, and their submission is rational, that is, dictated by their reason.

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[1] See Arthur J. Balfour: *Foundations of Belief,* p. 238. Longmans, Green and Company.

A better illustration of what Lord Balfour had in mind, and the one which interests us most, is our accepting the opinion of others because we are not in a position to form one of our own. Men accept such authority because they believe that it is based upon reason. As for the vast majority of the things of life all of us must depend upon such authority. Even scholars in special lines must depend, in no small degree, upon the authority of their coworkers. The mass of knowledge is very large, and the ability of the individual to investigate for himself is limited by time, his own development, and the special circumstances. No investigator does now, or, in fact, ever did, literally, take all fields for his own. Nor in our day can one field in its entirety be taken by any single investigator. And no field can stand out independent of other fields. The different fields in their interdependence make up the unity of the intellectual body of truth. So there must be division of labor. And the best we can do is to follow as authority those who have commended themselves to us as painstaking investigators who are cautious, and who are careful in expressing their findings. To accept such authority is to distinguish ourselves from the lower animals; for this is truly an act of a highly rational being. It is a distinguishing quality of human beings, and the more highly one is developed the less fear he has of such authority. It is rational acceptance because it is a critical taking of the results which others have reached. As Wesley says:

> To human testimony we assent only so far as it appears agreeable to truth. Yet this assent is very extensive, and makes up the greatest part of human knowledge. It takes in all we have of the history of mankind, all the accounts of whatever we have not seen ourselves. And we acquiesce in all this, not as probable only, but as so much real knowledge; being an assent, which is founded on such evidence, as often amounts to a moral certainty.[2]

Wesley in making his *Survey of Natural Philosophy* is an example of submitting to such authority. He frankly states in the preface to his *Survey* the authorities he follows. But he makes it plain that he submits them to a thorough criticism. And all he could depend upon was his general intellectual training, and his special training in certain lines, which, indeed, might have unfitted him in some ways for such a task. He was not a physical scientist, and did not pretend to be one: but chose those whom he considered to be the best scientific authorities, and used his judgment in selecting facts and opinions from them, and then stated them in the way that appealed to him best.

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[2] *Survey*, vol. ii, p. 454.

This kind of submission to authority really involves the supremacy of the individual judgment. By the very nature of the case the individual reason must pass upon the authority: otherwise it does not belong to the class of rational authority. Wesley had occasion more than once to assert this truth, and he did it with a good deal of vigor, quoting the highest scriptural authority in support of his position. As early as 1749 he wrote: "I therefore take no author for better, for worse: (as, indeed, I dare not call any man rabbi) but endeavor to follow each as he follows Christ. And not (knowingly) one step further."[3] These words are from the preface to his *Christian Library,* which was the abridgment of what Wesley considered the best in Christian literature. In his selections he had, as he states, one standard—Christ. So whatever he accepted for his *Christian Library* he considered to be in harmony with the teachings of Christ. But Wesley's judgment decided what was in harmony with the teachings of Christ. His judgment was final for him in the matter, as it must be for each individual.

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[3] Wesley: *A Christian Library,* Preface. *Works,* vol. vii, p. 526.

It is true that Wesley also puts the church as the final interpreter of the Scriptures. In describing the kind of people the Methodists were, he declares that they are "downright Bible Christians: taking the Bible, as interpreted by the primitive church, and our own, for the whole and sole truth."[4]

This is a highly interesting passage. Wesley admits, as every sane person must, that the Bible must be interpreted. Then he admits that a reliable interpretation can be reached only as there is some kind of common agreement. This is clear, for otherwise individual vagaries would have no check, and truth would be impossible. He makes the primitive church and the Church of England the interpreters. Wesley, however, did not and could not take his assertion in the categorical way in which he stated it. In the first place, the "primitive church" is too vague. It would, at least, mean the New Testament church. But, even so, not only is it difficult to get the interpretation of the Bible, that is, the Old Testament, for that was the Bible of the primitive church, on all but the most basal doctrines; but "the Bible" itself was not settled in its contents for the primitive church as it is for us. And as the canon of the Old Testament was not officially declared until the council of rabbis at Jamnia, 90 A. D., we are not just sure how much of our Bible the primitive church was interpreting. So we are left to the actual interpretations of particular passages, and we can have no guiding principle of judging the contents of the Bible of the primitive church. This, however, would affect Wesley very little, as Christ was his supreme standard. This being so, the Old Testament for him, as it should be for us, was authoritative only in the light of Christ's teaching. He makes his position perfectly plain in this matter in his contrasting the law and the gospel.

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[4] Wesley: *A Short History of Methodism. Works,* vol. v, p. 246.

Wesley distinguishes between the ceremonial and the moral law. Neither Christ nor Paul made any such distinction.[5] And Wesley distinguishes between the Law and the Old Covenant. His idea is that the law contains in principle the gospel, but it was stated in such thought-forms and in such language that the people could in their measure obey it.

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[5] See Hastings' *Dictionary of the Bible.* One-volume edition, p. 536.

> *He spake the word as they were able to hear it* —adapting it to the capacity of his hearers, and speaking as plain as he could without offending them. A rule never to be forgotten by those who instruct others. Mark iv. 33.

Yet it is not so easy to see him consistent in this. Here is his comment on Christ's words, as found in Matt. 11. 13—*For all the prophets and the law prophesied until John*—"For all that is written in the law and the prophets only foretold as distant what is now fulfilled. In John the old dispensation expired, and the new began." In the parallel passage in Luke, however, he comments on the words, *"Yet it is easier for heaven and earth to pass than for one tittle of the law to fail,"* as follows: "Not that the gospel at all destroys the law." So it seems that Wesley saw in the law being fulfilled in the gospel an expression of his idea of evolution, the gradual progressive unfolding of what was in germ in the law. That he saw no inconsistency in his comments on these passages is evident from the fact that he refers the reader from one to the other.

The truth seems to be that Wesley was not very clear in his own mind. He held that there was an abiding element in the law, and there was also a temporary element. In his comment on the words of Paul, where the apostle is drawing the distinction between the Mosaic law and the law of the Spirit, he explains, "*The law of the Spirit*—that is, the Gospel, *hath freed us from the law of sin and death*—that is, the Mosaic dispensation." And a similar comment is found on the words of Hebrews 8. 10: "*This is the covenant I will make after those days*—after the Mosaic dispensation is abolished." And he gives a stronger translation than is found in our English version to the passage, Hebrews 8. 13: "*In saying a new covenant, he hath antiquated the first*—has shown it is disannulled and out of date: *now that which is antiquated is ready to vanish away*—as it did quickly after, when the Temple was destroyed."

But even if the Bible of the primitive church was definite in its contents, there remains the problem of finding its interpretation. We can find it only in the general consensus of the church or in the pronouncements of the general councils. We have a few of such meetings in the New Testament, but the subjects discussed are not so much of a doctrinal nature as of immediate practical importance. Basal Christian doctrines were very few, and there seemed to be no disagreement over them. So the whole problem of the primitive church's interpretation of the Bible is vague.

The difficulties are hardly less when we consider the primitive church's interpretation of the New Testament. That the church is there cannot be doubted, nor can it be doubted that the primitive church gave us the New Testament. But as the canon of the New Testament was not finally settled until the fourth century, and then by no official pronouncement of a council, the primitive church's interpretation of the New Testament becomes increasingly vague. Indeed, the gradual growth of the canon by general consensus is about all that can be said for the interpretation of the New Testament by the primitive church. The earliest Epistles were written to particular churches and they were read to the respective church. Then there were Epistles addressed to a group of churches; and there was exchange of Epistles between the churches. These Epistles were recognized as authority. The Gospels were, however, read in all the churches; for, as might be expected, the words and acts of Christ were what the churches were most interested in. But there was no New Testament, the limits of which were fixed, as with us. As the basal doctrines were very few and very vital, the interpretation of the Gospels and of what Epistles were in circulation was largely for purposes of personal edification.

Then interpretation of the Bible by the primitive church is reduced to a comparatively small field, the essential doctrines held by historic Christianity from the beginning. And beyond doubt this was Wesley's position. In his sermon "preached on Monday, April 21, 1777, on laying the foundation of the New Chapel, near the City Road, London," among other things, he undertakes to answer the questions, "What is Methodism? What does this new word mean? Is it not a new religion?" And his answer is:

> This is a very common, nay, almost a universal supposition; but nothing can be more remote from the truth. It is a mistake all over. Methodism, so called, is the old religion, the religion of the Bible, the religion of the primitive church, the religion of the Church of England. This old religion (as I observed in the "earnest appeal to men of reason and religion") is "no other than love, the love, the love of God and of all mankind; the loving God with all our heart, and soul, and strength, as having first loved us—as the fountain of all the good we have received, and of all we ever hope to enjoy; and the loving every soul which God hath made, every man on earth, as our own soul. This love is the great medicine of life; the never-failing remedy for all the evils

of a disordered world; for all the miseries and vices of men. Wherever this is, there are virtue and happiness going hand in hand: there is humbleness of mind, gentleness, long-suffering, the whole image of God; and at the same time a 'peace that passeth all understanding,' with 'joy unspeakable and full of glory.' This religion of love and joy and peace has its seat in the inmost soul, but is ever showing itself by its fruits, continually springing up, not only in all innocence (for love worketh no ill to his neighbor), but, likewise, in every kind of beneficence—spreading virtue and happiness all around it!"[6]

This is the religion of the Bible, according to Wesley, as interpreted by the primitive church and by the Church of England.

As to the interpretation of the Bible by the Church of England the problem is much clearer. The Bible is that of the Protestant Church in general, and the interpretation is that of the Thirty-nine Articles. But they cannot be final. They must be interpreted. No one would insist more than Wesley upon the right of private interpretation with due consideration for the interpretations which differed from his.

So we finally are brought back to the judgment of the individual. And this is what Wesley most earnestly and most firmly insisted upon. This means, as he said, the right of private judgment. It is psychologically and morally impossible to escape both the right and the responsibility of the finality of the private judgment. No man ever stated it in clearer terms that Wesley. A Roman Catholic kept at him until he consented to read a book setting forth the views of that church. He says, "In the second chapter he brings many arguments to show that the Scripture is not the sole rule of faith; at least, not if interpretated by private judgment, because private judgment has no place in matters of religion!" Wesley's answer is:

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[6] *Sermons,* vol. i, p. 495.

> Why, at this moment you are appealing to my private judgment; and you cannot possibly avoid it. The foundation of your, as well as my, religion, must necessarily rest here. First you (as well as I) must judge for yourself, whether you are implicitly to follow the church or no; and also, which is the true church; else it is not possible to move one step forward.[7]

In substance, these words of Wesley are the same as we find in the ablest treatise on the theory of knowledge since Kant:

> There is no general standard which the mind can mechanically apply. The standard is the mind itself, dealing with particular and concrete cases, and any given item of knowledge must

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[7] *Journal,* vol. iii, p. 72. March 25, 1743.

stand or fall, not because it agrees or disagrees with some assumed standard, but because of the evidence with which it presents itself to the living mind in contact with the facts.[8]

In the quotation above Wesley has shown that it is an intellectual impossibility for anyone to escape the fact of the finality of the private judgment. We now quote him contending that morally and religiously we are as much bound by the private judgment as we are intellectually:

> Are we to be guided by our own conscience, or by that of other men? You surely will not say that any man's conscience can preclude mine. You, at least, will not plead for robbing us of what you so strongly claim for yourself: I mean the right of private judgment, which is indeed unalienable from reasonable creatures. You well know, that, unless we faithfully follow the dictates of our own mind, we cannot have a conscience void of offense toward God and toward man.[9]

Private judgment is judgment peculiar to oneself. Like everything when we think it through, it is based upon the nature of one's being. Each experiences himself as a unit. He distinguishes himself over against everyone else and everything else. This is the real or metaphysical basis of his moral life. And without this unity of being no moral life is possible. Without it there can be no feeling of responsibility, and no one who lacks it can be held responsible. Man also experiences himself as active. He knows that he is spirit, distinguished from his body, which he feels, and what experience teaches him—that his body is the servant of his spirit. For unity is not found in the body. He experiences unity in his spirit. Here there is no contradiction between the metaphysical and the moral. And man experiences himself as the highest finite being; he experiences himself as a self-active, self-conscious, and self-directing spirit. So he concludes that he is of infinite value, and end in himself. And spontaneously man has always acted as if he were the crown of creation, and that all things exist for him. And he certainly is right in this assumption. The material universe is of no use to itself. It can be of use only to conscious beings. We have no experimental evidence that there are other self-conscious finite beings besides men; and it is thought that forces us to an infinite creator, or God. But it would be difficult to say what value a physical universe without self-conscious finite spirits would be to an infinite Spirit. So whether man looks at himself in his internal nature or his external environment he finds both tell the same story—man is the crown of creation, he is an end in himself, the one sacred thing in creation.

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[8] B. P. Bowne: *Theory of Thought and Knowledge*, p. 293. Copyright by American Book Company. Reprinted by permission.

[9] *Works*, vol. v, p. 8. "An Earnest Appeal to Men of Reason and Religion."

Wesley, then, was absolutely right in holding that the right of private judgment is inalienable in rational creatures. And he was right in drawing the logical conclusion that one must follow the dictates of one's own mind, be loyal to one's own logical process, to have a conscience void of offense in the presence of God and of one's fellow men. This being so, it follows that the ultimate authority, the final court of appeal for each individual, is no other for each individual than the individual's own mind. The mind, as Borden P. Bowne has said, is its own standard. In vigorously asserting the inalienableness of the authority of the individual judgment Wesley was simply making a claim that no one can deny. Reasoning has no meaning without this assumption. This is why Wesley says that private judgment is inalienable in rational creatures. This brings us back to Protagoras! "Man is the measure of all things." And this is true, but it is not the entire truth. If it were the entire truth, we would have to draw the logical conclusion, as did Protagoras' fellow sophist, Gorgias, and say that each has his own truth. And that is the same as saying that there is no truth. Wesley, however, was too practical and too clear headed to draw this conclusion. He was a good deal of a philosophical skeptic, as we shall have occasion to show later, but he was always in touch with real life, and to hold that each individual has his little system of private truth is as about as far from real life as one can get. In his vigorous and decisive way he was asserting an all important truth. But he did not mean to deny the double reference in all human thinking—the subjective and the objective reference. This important viewpoint is revealed in his discussion of the different kinds of knowledge.

Wesley held that there are three kinds of knowledge, and as many kinds of evidence on which they are built:

> The first is that we have from our senses, which consist in an intellectual view of the ideas transmitted through them to the memory. This is a knowledge direct, immediate, and intuitive and carries in it the highest certainty.
>
> A second kind of knowledge is that we have from self-consciousness. We come to the knowledge of things without us by the meditation of their ideas; but we are immediately conscious of

what passes in our own minds without the intervention of any idea.

These two kinds of knowledge are immediate, and consequently a sort of intuition: entirely different from which is,

The third kind of knowledge, *reasoning,* which is mediate, and wholly acquired by reduction, by the exercise by that one operation of the mind, illation or consequence. This we may subdivide into different species, according to the different manner of the intellect's procedure, in making its deduction.

The first species is science or demonstration, which appears clearest in the syllogistic form, by applying a common measure to two extremes, which have an infallible connection with it. So that the conclusion follows by an absolute certainty, and compels the assent.

The second species of it is moral certainty, the utmost degree of which is nearest to demonstration. This knowledge is acquired by proofs, that have only an undoubted connection with the two extremes. The force of this every plain understanding perceives, and it rarely requires the syllogistic form, unless for the confuting perverse opposers. The arguments for it are deduced from all kinds of knowledge; but still the assent is free, and the will has a great share in promoting or hindering it. And hence it comes that there is room for passion and prejudice of all sorts to interpose and bias the intellect.[10]

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[10] *Survey,* vol. ii, p. 449.

Reason, as Wesley sees it, in the form of demonstration is the only objective form of knowledge. Sense knowledge and self-conscious knowledge are subjective. That is, they are experienced by individuals. They are immediate. Strictly speaking, such kinds of knowledge cannot be communicated, at least, to those who have not had experience of what they are trying to communicate. The second species of reasoning is also subjective. It is called moral certainty because it depends upon the will. And the will is the real man. It stands between the reason and the feelings; and many times the feelings influence the will to act contrary to reason.

Wesley is essentially right in his analysis of the kinds of knowledge possible to human beings. There is room for debate on some of the possible implications arising out of the manner of his statements. It is necessary, however, to state that Wesley is aware of the limited field of demonstration. He seems to see that it is confined to the field of the formal sciences, as mathematics and logic. He only names mathematics; but, of course, logic also is a purely formal science. The conclusion of a syllogism may be perfect in form and false in fact. And in mathematics the formal demonstration many times must be modified in application. Hence Wesley lays much stress upon probability. Bishop Joseph Butler said, "Probability is the guide of life." And Wesley says:

> The main conduct of human life is governed by the highest probability: so that, in many instances it would be downright madness, not to be determined by it.[11]

And in practical life probability and belief play a much larger place than demonstration and knowledge, the latter terms understood in the strict sense. Yet when we say we are morally sure of anything, while we cannot give reasons for our conviction, we are fully persuaded that there are reasons for it. Reason is objective. It appeals to all minds, and assumes that the laws of all human minds are the same. This is what is meant by the objectivity of thought; and, as Bowne shows, the judgment is absurd without it.[12] So the test of authority is double. And there is no contradiction in Wesley insisting upon the right of private judgment, and the duty of following the dictates of one's own mind, on the one hand, and, on the other, accepting the Bible as interpreted by the church. It will be noted, however, that the final act is the individual's accepting the judgment of another as one's own. No person can escape the responsibility of the judgment. As we are developing beings, our judgments are not infallible. And it is this fact that makes life a great adventure. Our very mental nature calls to us to live the heroic life. It is not "Safety first" but "Launch out into the deep" that is the call of our mental nature, as well as the call of Christianity. And the standard of authority is the individual mind itself making its decision after due reference to other minds, singly and collectively. Wesley tried to follow this only sane way. Hence there is no contradiction in his emphatically asserting the right of private judgment and the finality of the individual mind in judging and at the same time holding the following:

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[11] *Survey,* vol. ii, p. 453.

[12] B. P. Bowne: *Theory of Thought and Knowledge,* pp. 13-18.

> It is true. I am hereby convinced of several mistakes, which I have been in for many years. But I look upon every such conviction as a valuable acquisition. And I trust, my heart will always say both to God and man, "What I know not, teach thou me."[13]
>
> I am ready to give up every opinion which I cannot by clear, calm reason defend.[14]
>
> We join with you in deserving a religion

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[13] *Survey,* vol. ii, p. 345.

[14] Wesley: *A Letter to the Rev. Mr. Downes,* November 7, 1759.

founded on reason, and every way agreeable thereto.[15]

But some may say, "I have mistaken the way myself, although I take upon me to teach it to others." It is probable many will think this, and it is very possible that I have. But I trust, whereinsoever I have mistaken, my mind is open to conviction. I sincerely desire to be better informed. I say to God and man, "What I know not, teach thou me."[16]

Briefly, then, Wesley's principle of authority means, as with Lord Balfour, that the greatest part of human knowledge must come through authority. But such authority is not independent of reason, for it must convince the individual judgment that it is based on reason. So while the individual judgment is special to each individual mind the laws that make a mental act a judgment are common to all minds. And it follows that authority must ultimately rest upon each individual's conviction that it is founded upon reason. This is the actual position of Wesley, and it explains why he always insists upon plain Scripture or plain reason to justify a position.

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[15] *Ibid.: An Earnest Appeal.*

[16] *Ibid.*, Preface, *Sermons.*

CHAPTER X

WESLEY AND THE SCRIPTURES

CONSISTENCY is a test of truth, yet inconsistency is not seldom an outstanding quality of the earnest seeker after truth. His experience with his own mental processes and his observation of the acts of other men tell him that anything that has lived very long has some truth in it, though there may be much error in it also. So many times we find such a person holding apparently opposing views, and even views that mutually cancel each other. The reason is he feels that both embody some truth, and truth is too precious a thing to treat a possibility of it lightly. Wesley was such a one. His love for truth was dominating, his mental energy was stupendous, and his intellectual curiosity knew no bounds. He was aware of this latter quality himself. And he had to keep a check on himself lest his love of learning would take too much of the time he felt should be given to his calling to preach. So it is not difficult to find inconsistencies in him. One writer, not at all unfriendly to Wesley—indeed, one of his followers—discussing his personality says:

And the first thing that impresses us is its strange contradictions. The credulous and the critical, fanaticism and sound judgment, were well-nigh inextricably commingled.[1]

This is true, and yet there will be found method in all of these strange contradictions. Wesley is never credulous when credulity would endanger any essential truth.

Wesley's inconsistency is most prominent in his attitude toward the Bible. It is evident that he quotes the Scriptures as if they were final authority. And his mind was saturated with Scriptural texts, a quotation projecting itself at the least provocation. Then we have his direct testimony. He claimed that the Methodists, as we have seen, were "downright Bible Christians; taking the Bible, as interpreted by the primitive church, and our own, for the whole and sole truth." Again, he writes: "I believe all the Bible, as far as I understand it, and I am ready to be convinced."[2] Now it will not escape the notice even of the not especially careful reader that there is almost always either a modification to what at first seems a categorical statement, or there is a mental reservation. It is either, "as interpreted by the primitive church and our own," or "by reason"; or he accepts the Bible "as far as I understand it, and I am ready to be convinced"; it is evident the words "the whole Bible" cannot be understood in an absolute sense. His difficulties in believing the whole Bible reveal themselves when he explains why he was so long in writing his *Explanatory Notes Upon the Old Testament.* There was no particular reason why he should have said anything about the delay. But Wesley was above everything, honest. And he seemed not justified in keeping the real reason for the delay to himself. So he puts it plainly: "I objected that there were many passages in the Old which I did not understand myself, and consequently could not explain to others, either to their satisfaction or my own."[3] As the reader goes through Wesley's *Explanatory Notes Upon the Old Testament* he finds that Wesley did not finally write his notes because he had come to an understanding of "the many passages," but that the notes might be a practical help to the people to whom he tried to minister. This is quite evident from the many passages upon which he makes no comment whatever. When these passages are noted it will be found that he has no data by which he can throw light upon them, or they are of such a moral standard that his Christian consciousness cannot tolerate them. Now, it may be said that he should have said just this. To comment on the Old Testament is not to comment only on those things which please the commentator. This criticism is justified until we remember that Wesley did not pretend to write a commentary on the Old Testament, but simply to make some notes which would be of practical value to his people. For those who wished to go more thoroughly into the subject, he recommended certain commentaries.[4] The work was thus intended to be of positive practical help to the members of the Methodist societies, and he felt justified in ignoring some difficult passages. Nevertheless, we can learn much from this work as to Wesley's real attitude toward the Old Testament.[5]

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[1] Fred M. Davenport: *Primitive Traits in Religious Revivals,* p. 138.

[2] Letter to the Rev. Mr. Venn, June 22, 1765.

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[3] *Explanatory Notes Upon the Old Testament,* preface, p. iii.

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[4] Wesley: *Explanatory Notes Upon the Old Testament*, Preface.

[5] "The *Explanatory Notes Upon the Old Testament* are allowed on all hands to be meager and unsatisfactory; that is owing to a circumstance with which few are acquainted. Mr. Pine, the printer, having set up and printed off several sheets in a type much larger than was intended, it was found impossible to get the work within the prescribed limits of four volumes, without retrenching the notes, or cancelling what was already printed. The former measure was unfortunately adopted, and the work fell far short of the expectation of the public. This account I had from the excellent author himself."—Adam Clarke, in the General Preface to his Commentary on the Bible.

THE PURPOSE OF THE OLD TESTAMENT

The purpose of Scripture, as we have seen in another connection, was to bring us to God. In commenting on Gen. 1. 3, he writes: "He made the stars also, which are spoken only in general, for the Scriptures were written not to gratify our curiosity but to lead us to God."[6] Now and then we have a book published which claims that it has reconciled Genesis 1 and modern science. Wesley was not at all interested in such work. He tells us the Scriptures were not written for any such purpose. The general statement that "he made the stars also," is not a scientific statement, but one that anyone who believes in God the Creator would use. Science, as Wesley always stated it, "searches out the properties of particular things"; its province is "to set down what appears in nature, not the cause of those appearances."[7] Philosophy and religion deal with the problem of cause; philosophy in a reflective way; religion by way of revelation. The first chapter of Genesis does deal with the problem of causation; that is, not secondary causation which only describes how things come about, but ultimate causation, the first cause. In the passage quoted Wesley makes this manifest. The Scriptures do not make a textbook on science. Their purpose is essentially religious.

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[6] "The *Explanatory Notes Upon the Old Testament* are allowed on all hands to be meager and unsatisfactory; that is owing to a circumstance with which few are acquainted. Mr. Pine, the printer, having set up and printed off several sheets in a type much larger than was intended, it was found impossible to get the work within the prescribed limits of four volumes, without retrenching the notes, or cancelling what was already printed. The former measure was unfortunately adopted, and the work fell far short of the expectation of the public. This account I had from the excellent author himself."—Adam Clarke, in the General Preface to his Commentary on the Bible.

In his comments on the third chapter of Genesis, which is the account of the disobedience of Adam and Eve, we find the following very enlightening words for an understanding of Wesley's view of the revelation which is found in the Old Testament:

> The inspired penman in this history, writing for the *Jews* first, and calculating his narratives for the infant state of the church, describes things by their outward sensible appearances, and leaves us, by further discoveries of the divine light, to be led into the understanding of the mysteries couched under them.[8]

The Scriptures and History

Wesley held that the writer was inspired, and that the story was history, and that he was writing for the Jews first, and for the infant state of the church. The inspiration was limited, however, by the development of the Jews and by that of the infant church. That is, the principle of accommodation is clearly stated by Wesley. The meaning of which is that the inspired writer was compelled to accommodate his message to the intellectual and moral development of his readers who were, first, the Jews, and then those of the infant church. Wesley illustrates this method of accommodation in the following way:

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[7] *Survey,* Preface.

[8] Wesley: *Explanatory Notes Upon the Old Testament,* Genesis 3.

> As God has made men the immediate instruments of all his revelations, so he hath consented to make use of human language, as well as our natural ideas and conceptions, for the clear and easy representation of things supernatural and otherwise incomprehensible. Indeed, the intrinsic nature of heavenly things could not otherwise have been revealed to us, seeing that we had neither capacity to apprehend, nor language to express it. Or had it been miraculously revealed to a particular man, yet it would not have been possible for him to utter it. This made it necessary to adapt all the divine revelations to our natural way of thinking and speaking. And, accordingly, we are not obliged to believe any doctrine, which is not plain and intelligible. All in Scripture, beyond this, is no immediate object of our faith, but belongs to another world; and

we are at present to believe no more of it than that it is incomprehensible.[9]

This, as we have seen, is in harmony with Wesley's conception of the principle of authority. And it is evident that he is stating the application of this principle to the problem of revelation; it was necessary for it to be made in forms of our thinking and in forms of our language. And he draws the inevitable conclusion that we are not under obligations to accept anything as a revelation which is not plain and intelligible. In short, a revelation is not a revelation until it is understood. And as neither the human judgment, nor human conceptions, nor ideas, nor expressions are infallible, so it follows that no revelation can be infallible to human beings. And we can appreciate Wesley's saying to one of his correspondents: " 'Infallible testimony' was your word, not mine: I never use it; I do not like it. But I did not object to your using the phrase, because I would not fight about words. If, then, the question be repeated, 'In what sense is that attestation of the Spirit infallible?' Anyone has my free leave to answer, 'In no sense at all.' "[10] So as Wesley saw that an infallible inspiration was impossible, the human mind being what it is, it is not strange that all history gives the same testimony.

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[9] *Survey*, vol. ii, p. 455.

[10] Letters to Mr. John Smith. *Works*, vol. vi, p. 628; Henry Moore: *The Life of the Rev. John Wesley*, vol. ii, p. 423. New York, 1825.

The Scriptures and Physical Science

Yet Wesley could speak of "the inspired penman in this history" without any inconsistency. The penman was inspired, but the inspiration was limited by the measure of development of the penman. And we might say that "the inspired penman in his physical science," that is, when he "describes things by their outward sensible appearances," was limited in his descriptions by his development, and that he "leaves us, by further discoveries of the divine light, to be led into the understanding of the mysteries couched under them." So Wesley held that it is our business to seek to make further discoveries of the divine light. This is the work of the physical scientist who Wesley considers has a divine mission. The writer of the third chapter of Genesis tells us directly of God, the First Cause of things; it is the business of the physical scientist to search out "the particular properties of things," and thus lead men indirectly to the First Cause, God.

As has been said before, in another connection, some of Wesley's statements about Scripture are not consistent with such a fundamental division of the respective provinces of Scripture and physical science. The best expression of this division of labor is his wholehearted acceptance of the Copernican astronomy when the contending theories, the Ptolemaic, Tychonic, and the Cartesian, were set aside because "Sir Isaac Newton stepped forward in the plentitude of genius, and like a mighty umpire, laid down the laws of nature and of motion, and by comparing all the phenomena of the heavens, found out the true system of the universe, and confirmed the Copernican system. He demonstrated by unanswerable arguments, that it could not possibly be otherwise, without the utter subversion of all the laws of nature."[11]

Now, it is just beyond all possibility to reconcile the system of astronomy wrought out by the Roman Catholic parish priest, Copernicus, with the astronomical conceptions of the writers of the Bible. And anyone reading the Bible without the presupposition of infallibility, and without a predisposition to reconcile its general conception of the heavenly bodies with modern astronomy, would agree with Dr. William North Rice, a Methodist preacher and an eminent geologist, in his description of the astronomical ideas of the Bible:

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[11] *Survey,* vol. ii, p. 112.

> The Bible certainly teaches that there is a flat earth, with a roof over it which separates the waters above from the waters below, that rain falls on the earth when windows in that roof are opened, and that two great lamps are connected with that roof. The astronomy of the Bible is not only pre-Copernican, but pre-Ptolemaic. The biblical conception of the heaven and the earth antedates the earliest dawn of astronomical science.[12]

It is just impossible to hold that such a keen, critical and intellectually honest man as Wesley did not see what Doctor Rice so clearly states. Here are Wesley's words on Copernicus and his system; and, incidentally, his opinion of those who, through prejudice, refuse to face the evidence:

> The Ptolemaic system had gained universal credit when Copernicus began to entertain doubts of its truth; and to try if a more rational scheme could not be projected. He had recourse to every means, for information, and found from Cicero, that Nichetas, a Syracusian astronomer, had maintained the doctrine of the rotary motion of the earth, and that Pythagoras and others of the ancients had maintained the same opinions.
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> From these small hints, this great genius deduced a most complete system of astronomy, capable of solving every phenomena in a satisfac-

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[12] William North Rice, *The Christian Advocate*, New York, April 20, 1923.

tory manner, a system which has been amply confirmed by the discoveries and improvements in astronomy, since that time. Like all important discoveries, however, when they run counter to popular prejudices, this system was very much opposed, and Copernicus himself considered as a wild theorist.[13]

Wesley's reference to popular prejudice had a healthy influence upon the more intelligent of his followers. The American edition of the *Survey,* by B. Mayo, has the following paragraph, which is remarkably like Wesley both in substance and style:

> In process of time many important discoveries have been made which have been gradually assented to as prejudice could give place; for, allowing that it takes a century to make a discovery, it requires another century to remove the prejudice. Such is the force of attachment and the power of habit that when once the mind is established in wrong it will hardly be restored to right; the mightiest efforts of reason are too feeble to shake the foundations of error in those minds wherein ignorance and indolence have conspired against truth; such a conspiracy is too common and too formidable to permit a hope of speedy reformation from popular wrong. The uncultivated mind is more prone to judge than to investigate, to censure than to commend; and, indeed, in general, there is not a more certain

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[13] *Survey,* vol. ii, p. 112.

criterion of ignorance than hasty and inconsiderate judgment.[14]

And for this reason Wesley held that the study of natural history is the best logic: it best teaches us to suspend our judgment.

And we have seen that Wesley considered the calling of the scientists a very exalted one. He is speaking of the scientists when he says God "has commanded the heavens and the earth to proclaim his existence, to make him known to us." And he adds "and has raised up men who explore their beauties, and become their interpreters."[15] So, according to Wesley, we are not to go to the Old Testament for light on physical science. This thought can hardly be expressed more clearly than in the words which we have just quoted from him. He will, however, take an explanation from the Scriptures when he has no other. He describes the creation of man as it is found in the second chapter of Genesis, assuming that the body of man rose immediately from a lump of clay out of the ground. Wesley's description is similar to the crude picture Lucretius gives us of the origin of men and of animals. But he holds that the development of the human body from the embryonic germ to the new-born babe is much more impressive. His words are: "Let us suppose the figure, above mentioned, rises by degrees, and is finished part by part in some succession of time."[16] If Wesley had extended this picture to apply to the racial development of man, he would have come very near the present evolutionary idea of the origin of man. The interesting point is that Wesley is much more impressed with the origin of individuals as we know it, "by degrees, and is finished part by part in some succession of time," than he is in this description of the original creation.

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[14] The present writer, in his *Back to Wesley,* inadvertently ascribed this quotation to Wesley. It certainly corresponds exactly with the thought of Wesley in the matter of prejudice, and it is worth quoting for its truth, and its keen insight into human nature.

[15] Wesley: *Survey,* vol. ii, p. 342.

In another place in his *Survey of Natural Philosophy* he discusses the problem of the origin of man, concluding that it is too difficult a problem for the human mind. "How mankind began, is another point which it is too hard for our reason to determine." After stating some of the difficulties he writes:

> The scriptural account is this: God made the body of man out of the earth, and breathed into him the breath of life; not only an animal life, but a spiritual principle, created to live forever. Even his body was then perfect in its kind, neither liable to death nor pain. But what the

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[16] *Survey,* vol. ii, p. 183; Bonnet, vol. ii, p. 301.

difference was between the original and the present body we cannot determine.[17]

Wesley's treatment of this subject is obscure. He states this scriptural account as if it is to stand for what it is worth. He disposes of this scriptural account in this short paragraph; but even so, he adds some assumptions which the account does not contain. The scriptural account is simply this:

> "And Jehovah God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul."—Genesis 2. 7.

He passed from this short paragraph to give more than a page to the account of the development of the embryo. As science did not and could not give him any account of the origin of the first man, he took the account as given in Genesis, drew a few inferences from it, and left it. He could have done very little better if he were here to-day. The latest investigations can only tell us: "We do not know how he arose, or whence he came, or where he was. His antiquity is certain, but little else."[18] Nevertheless, it must be admitted that Wesley was not true to his principle in his treatment of this passage that "the Scriptures were not written to gratify our curiosity but to lead us to God." Indeed, if it had not been for Wesley's insatiable intellectual curiosity, we think he would have been satisfied to accept the account of the creation of man as found in the first chapter of Genesis, which is simple and in harmony with Wesley's principle of the purpose of Scripture, that "they were not written to gratify our curiosity but to lead us to God." Then, intellectually, the account in the first chapter of Genesis is much superior to that in the second chapter: "And God created man in his own image, in the image of God created he him, male and female created he them" (Gen. 1. 27).

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[17] *Survey,* vol. i, p. 113.

[18] J. Arthur Thomson, *The Bible of Nature,* p. xiii. Reprinted by permission of Charles Scribner's Sons.

Consistently holding to his principle of accommodation here would have saved Wesley much trouble, for it would have steadied him throughout his work on the Old Testament. It caused him to lay down the principle that readers of the Bible were not to go to the Old Testament for their science; but he was not always clear in its application. Francis Bacon, whose services in breaking the power of the scholastic philosophy Wesley appreciated so much, laid down this principle long before Wesley did; and he was both consistent and clear in this application. Bacon is warning against "the corruption of philosophy [using the word in the sense of physical science] by the mixing of it up with superstition and theology," and cites as an example the efforts of some to build a system of philosophy on the first chapter of Genesis.

> Against it we must use the greatest caution; for the apotheosis of error is the greatest evil of all, and when folly is worshiped, it is, as it were, a plague spot upon the understanding. Yet some of the moderns have indulged this folly with such consummate inconsiderateness, that they have endeavored to build a system of natural philosophy on the first chapter of Genesis, the book of Job, and other parts of Scripture, seeking thus the dead amongst the living.[19]

Marcus Dods, in his exposition of the Book of Genesis, puts the modern view which is that of Bacon and that of Wesley, when the latter wrote that the Scriptures were written "to lead us to God." Dods' words are:

> If anyone is in search of accurate information regarding the age of this earth, or its relation to the sun, moon, and stars, or regarding the order in which plants and animals have appeared upon it, he is referred to recent textbooks in astronomy, geology, and paleontology. No one for a moment dreams of referring a serious student of these subjects to the Bible as a source of information. It is not the object of the authors

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[19] Francis Bacon, *Novum Organum,* book i, Aphorism LXV.

of Scripture to impart physical instruction or to enlarge the bounds of scientific knowledge.[20]

THE SCRIPTURES AND RELIGION

Consistently holding to such a principle would have saved Wesley some embarrassments. But when he was called upon to face a problem he did it fearlessly, and did not apologize for his plain language. This is just what he did in compiling an order of service for the Methodist Church in America. It was an abbreviation of the Liturgy of the Church of England; and he forestalled all criticism by the following words: "Many Psalms [are] left out, and many parts of the others, as being highly improper for the mouths of a Christian congregation."[21] This is one step further than he took in not going to the Bible for his science. Here he frankly admits that the Old Testament in morals is a developing revelation. As we have seen before, Christ was Wesley's standard in morals and religion; and he was not so mechanical as to let a theory of inspiration allow him to put into the mouths of professing Christians to repeat in their worship sentiments which they would not dare put into practice upon leaving the place of worship.

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[20] Marcus Dods: *Expositor's Bible,* "Genesis," p. 1.

[21] Wesley: *Sunday Service,* Preface.

Wesley had difficulties with the Scriptures. This was because he had no clearly defined theory of inspiration. The traditional Protestant attitude was that of an infallible Bible. This seemed to be the back-lying idea in Wesley's mind; but when the theory conflicted with his Christian consciousness or with the facts of life, his Christian consciousness ignored the theory. But when he had to face the problem he did not flinch. So we find him answering the pseudonymous Mr. Smith:

> I am as fully assured to-day as I am of the shining of the sun that the Scriptures are of God. I cannot possibly deny or doubt it now; yet I may doubt of it to-morrow; as I have heretofore a thousand times, and that after the fullest assurance preceding. Now, if this be "a demonstration that my former assurance was a mere fancy," then farewell to all revelation at once![22]

Is it any wonder that Wesley wrote to this same gentleman repudiating the idea that he had used the term "infallible testimony"? After what he said of doubting a thousand times that the Scriptures were of God it is not strange that he did not like the term "infallible testimony." We can imagine what it would have meant to Wesley if he had had the results of modern biblical criticism. He would have not reverenced the Scriptures less, but he would have had a much more comfortable attitude toward them. He would have not been called upon a thousand times to doubt them. He doubted because the theory of the inerrancy of the Scriptures conflicted with the constitution of the human mind and his Christian consciousness.

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[22] Wesley: *Works,* vol. vi, p. 642.

We have seen how Wesley stated that the Old Testament, while revealing the will of God, did not give us perfect knowledge of history, of natural things, or of moral things, or of religious things. When we turn to the New Testament we find that his principle that the Scriptures were intended essentially for religious purposes is even more clearly stated. "The Scriptures," he says, "describe scenes of Divine Providence."[23] Here he must be understood as emphasizing the religious factor rather than the historical, for he distinctly declares that historical inaccuracies do not impair the religious value of certain Scripture; indeed, he even holds that historical accuracy might have proven detrimental for the end the evangelist had in view. And while this may sound very strange, as a matter of fact Wesley was right. He is commenting on the genealogical lists as found in Matthew and Luke. He does not say that there are inaccuracies in them; but, if there should prove to be, it would simply reveal the fact that the Jewish tables from which the lists were made were inaccurate. And if the evangelists undertook to correct them, it would only arouse debate, and detract the minds of their readers from the grand end they had in view, namely, the fact that Christ was of the line of David. The comment is worth quoting:

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[23] *Sermons,* "On Providence."

> If there were any difficulties in this genealogy or that given by Saint Luke, which could not easily be removed, they would rather affect the Jewish tables than the credit of the evangelists, for they act only as historians setting down these genealogies as they stood in those public and allowed records. Therefore they were to take them as they found them. Nor was it needful they should correct the mistakes if there were any. For these accounts sufficiently answer the end for which they are recited. They unquestionably prove the grand point in view that Jesus was of the family from which the promised seed was to come. And they had more weight with the Jews for this purpose than if alterations had been made by inspiration itself, for such alterations would have occasioned endless disputes between them and the disciples of our Lord.[24]

It may be that Wesley reached this position because he was observant enough to see that this was precisely the attitude the writers of the New Testament took toward the Old Testament. His comment on the first phrase in Matt. 2. 17 is:

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[24] Wesley: *Explanatory Notes Upon the New Testament,* Matthew 1. 1.

> *"Then was fulfilled"*——A passage of Scripture, whether prophetic, historical, or poetical, is in the language of the New Testament, fulfilled when an event happens to which it may with great propriety be accommodated.

This may seem to be carrying the principle of accommodation too far. But let us turn to Luke 4. 18-19. The evangelist is giving the account of Christ entering the synagogue on a Sabbath, and when the book of Isaiah was handed to him he opened to the sixty-first chapter and read:

"The Spirit of the Lord is upon me,
Because he anointed me to preach good tidings to the poor:
He hath sent me to proclaim release to the captives,
And recovering of sight to the blind,
To set at liberty them that are bruised,
To proclaim the acceptable year of the Lord."

The quotation is not exact. After allowing for the fact that Luke does not follow the Hebrew but the Greek text, the passage in the latter is not quoted exactly. He omits some very significant words. In Isaiah after "To proclaim the acceptable year of the Lord," there follows "and the day of vengeance of our God." Now, why did Luke omit this phrase? Or, did Christ do the omitting and Luke quote Christ with exactness? If the former, then Wesley had an excellent precedent in the evangelist Luke for his principle of accommodation. If Christ closed the roll when he finished reading the sentence, "To proclaim the acceptable year of the Lord," then Wesley had the highest authority for his principle of accommodation. Now everything points to the latter interpretation. Christ had no interest in proclaiming "the day of vengeance of our God," for he tells us that he came, not to judge the world, but to save the world; he came not to destroy men's lives, but that they may have life, and have it abundantly. And his mission was to proclaim the gospel, the good news, the glad tidings of God. Christ used whatever he found in the Old Testament that was in harmony with his Messianic consciousness. Now, this is just what Wesley did. As we have seen before, Wesley claimed that he followed authors only as they followed Christ. And his principle of accommodation was simply the application of this rule to the writers of the Bible. And certainly no Christian can do otherwise. We must say, as did Wesley, "One is your master, even Christ, and all ye are brethren."

When we consider Wesley's principle that all scripture must be considered in the light of the end for which it was written, we find it was the principle of the evangelists and it was the principle of Christ. As we have just shown, Christ's mission was to proclaim the gospel, the Good News of God. And this was the "whole gospel" to Wesley. Some of his followers have caught this spirit. Alfred Tennyson illustrates this out of his own experience in the following extract from a letter written in 1839 to Emily Sellwood, who later became his wife:

> Mablethorpe. I am not so able as in old years to commune *alone* with nature. I am housed at Mr. Wildman's, an old friend of mine in these parts: he and his wife are two perfectly honest Methodists. When I came I asked her after news and she replied: "Why, Mr. Tennyson, there's only one piece of news that I know, that Christ died for *all* men." And I said to her, "That is old news, and good news, and new news"; wherewith the good woman seemed satisfied. I was half-yesterday reading anecdotes of Methodist ministers, and liking to read them too. . . . and of the teaching of Christ, that purest light of God.[25]

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[25] *Alfred, Lord Tennyson: A Memoir by His Son,* vol. i, p. 168. Reprinted by permission of The Macmillan Company.

Wesley, like Martin Luther,[26] was opposed to interpreting scripture by any allegorizing method. He lays down the principle: "No other ideas are to be affixed to the words of Scripture, than such as occur to one who looks at the thing spoken of."[27] And the net result is that Wesley's attitude toward the Scriptures was practical rather than critical. So little had been done in what we know as the historical criticism of the Bible that it had practically no influence. He approached the Scriptures from the standpoint of the constitution of the human mind. This was the most fundamental standpoint, and one who, like Wesley, always sought to get at the essence of everything, would naturally be drawn to adopt. No matter what one's theory of inspiration might be, if it were not in harmony with the constitution of the human mind, it must be false. Hence each one must depend upon his private interpretation, and take his risks. As Wesley showed, no other method was open to human beings. So he accepted the Scriptures as inspired by God, and they gave the most assured knowledge in regard to what he needed most.[28] So practically Wesley's attitude toward the Scriptures was about what we find in sensible men to-day. We do not go to the Bible for anything but to know God's purpose in our lives; and we realize that we have to interpret the revelation by our reason and experience.

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[26] Preface to *Commentary on Genesis.*

[27] *Survey,* vol. i, p. 412.

[28] *Sermons,* vol. i, p. 452.

Wesley's most difficult problem is when he finds some things in Scripture which seem to conflict with his Christian moral and religious ideals. He holds to the ideals, leaving the difficulties unexplained. This is clearest seen in his fiery protest against predestination:

> This is the blasphemy clearly contained in *the horrible degree* of predestination! And here I fix my foot. On this I join issue with every asserter of it. You represent God as worse than the devil; more false, more cruel, more unjust. But you say, you will prove it by Scripture. Hold! What will you prove by Scripture? That God is worse than the devil? It cannot be. Whatever that scripture proves, it never can prove this; whatever its true meaning be, this cannot be its true meaning. Do you ask, "What is its true meaning then?" If I say, "I know not," you have gained nothing, for there are many scriptures, the true sense whereof neither you nor I shall know, till death is swallowed up in victory. But this I know: better it were to say it had no sense at all than to say it had such a sense as this. It cannot mean, whatever it mean besides, that the God of truth is a liar. Let it mean what it will it cannot mean that the Judge of all the world is unjust.

No scripture can mean that God is not love, or that his mercy is not over all his works: that is, whatever it proves besides, no scripture can prove predestination.[29]

Then no scripture was accepted by Wesley which did not stand the test of the moral and religious ideals as he received them from Christ, as well as the tests of reason and experience.

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[29] *Sermons,* vol. i, p. 488.

CHAPTER XI

THE MYSTICAL AND THE RATIONAL IN WESLEY

WESLEY was first and always a religious genius. His consuming passion was to experience the presence of God in his heart and to lead others to the same experience. For the satisfaction of this passion he was willing to pay any price. We have seen that he sought for thirteen years the religious experience which he realized at the meeting in Aldersgate Street while one was reading Luther's Preface to the Epistle to the Romans. He says, "I felt that I did trust in Christ, Christ alone for salvation; and an assurance was given me that he had taken away *my* sins, even *mine,* and saved *me* from the law of sin and death." This is one, perhaps the supreme, example of mystic experience in the life of Wesley. He always considered such experience the very essence of Christianity. Yet Wesley would not wish to be called a mystic. He says about as decisive adverse things against the mystics as he does about downright hardened sinners. His criticism, however, is not indiscriminate. He appreciates the essence of mysticism, which he holds to be the essence of religion, communion with God. But he insisted that it should not be "tinctured with enthusiasm," that is, fanaticism. The following makes Wesley's position clear:

> This morning I had a particular conversation (as I had once or twice before) with Jeannie Bisson, of this town, such a young woman as I have hardly seen elsewhere. She seems to be wholly devoted to God, and to have constant communion with him. She has a clear and strong understanding; and I cannot perceive the least tincture of enthusiasm. I am afraid she will not live very long. I am amazed at the grace of God which is in her; I think she is far beyond Madame Guyon in deep communion with God; and I doubt whether I have found her fellow in England. Precious as my time is, it would have been worth while to come to Jersey had it been only to see this prodigy of grace.[1]

Madame Guyon, the celebrated mystic, he defended against Lord Lyttelton, speaking of her in his *Dialogues of the Dead* as "a distracted enthusiast." Wesley's rejoinder is:

> I believe Madame Guyon was in several mistakes, speculative and practical too. Yet I would no more dare to call her, than her friend Archbishop Fénelon, "a distracted enthusiast." She was undoubtedly a woman of a very uncommon

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[1] *Journal,* vol. vii, p. 319, August 25, 1787.

understanding, and of excellent piety. Nor was she any more "a lunatic" than she was a heretic.[2]

His practical objection to mysticism was its tendency to "slight not only works of piety, the ordinances of God, but even works of mercy."[3] Wesley held from the beginning of his serious religious life at Oxford when he joined the Holy Club, the purpose of which was to develop personal religion and express it in Christian philanthropy, that communion with God must manifest itself in good works. And he held this to the end of his days. So Wesley inevitably became a social reformer; but his social reform movements were the direct expression of the spiritual energy generated by his communion with God. He scorned the quietism of so many of the mystics which caused them to withdraw from the society of men and to spend all their time in "silent prayer and quiet waiting for God."[4] Wesley asks, "Was there ever so pleasing a scheme?" He saw the seductiveness of this extreme subjective and unsociable religion, and does not hesitate to say that Bible religion differs from it "as light does from darkness." And when it expressed itself in a social way it was apt to take on a form that was revolting to Wesley—so revolting that he called it "poison"—and that was not too severe a word for the following account which he received from one who had direct knowledge of such performances:

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[2] *Ibid.*, vol. v, p. 382. August 31, 1770.

[3] *Ibid.*, vol. v, p. 46. February 5, 1764.

[4] *Ibid.*, vol. ii, p. 419.

> It is common in the congregations attended by Mr. W. W. and one or two clergymen, after the preaching is over, for anyone that has a mind to give out a verse of a hymn. This they sing over and over with all their might, perhaps above thirty, yea, forty times. Meanwhile the bodies of two or three, sometimes ten or twelve, are violently agitated; and they leap up and down, in all manner of postures, frequently for hours together. I think there needs no great penetration to understand this. They are honest, upright men who really feel the love of God in their hearts. But they have little experience, either of the ways of God or the devices of Satan. So he serves himself of their simplicity, in order to wear them out and to bring a discredit on the work of God.[5]

The aims of the mystics he thoroughly appreciated, as the following makes clear:

> These considerations insensibly stole upon me as I grew acquainted with the mystic writers, whose descriptions of union with God and internal religion made everything else appear mean, flat, and insipid.[6]

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[5] *Journal,* vol. v, p. 27. August 27, 1763.

[6] *Ibid.,* vol. i, p. 420. January 24, 1738.

But as he pursued his study of them he began to see that they also made good works and faith mean, flat, and insipid. But the teaching that seemed to bring Wesley to his senses was their making love itself antagonistic to the Scriptures and reason: "I had a plenary dispensation from all the commands of God: the form ran thus: 'Love is all; all the commands beside are only means of love: you must choose those which you feel are means to you, and use them as long as they are so.'" He condemns Luther's mysticism as it influences the latter in his *Commentary on the Epistle to the Galatians* because it causes him to be "quite shallow in his remarks on many passages, and muddy and confused almost, on all." And it makes him often "dangerously wrong." And, in particular, Wesley objects to his decrying reason: "How does he (almost in the words of Tauler) decry reason, right or wrong, as an irreconcilable enemy to the gospel of Christ! Whereas, what is reason (the faculty so called) but the power of apprehending, judging, and discoursing. Which power is no more to be condemned in the gross than seeing, hearing, or feeling."[7]

Wesley was too keen to condemn any power of mind or body that was native to man; as it is self-evident that God is responsible for them. And while he held firmly to the fall of man as a fact, and to the doctrine of original sin, the latter being the result of the fall, he held that man's native powers were God-given, and good in themselves. And he was bright enough to see that with all of his exaltation of the Scriptures they must submit to the court of human reason. The following makes this clear:

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[7] *Ibid.*, vol. ii, p. 467. June 15, 1741.

> The foundation of true religion stands upon the oracles of God. It is built upon the prophets and the apostles, Jesus Christ himself being the chief cornerstone. Now of what excellent use is reason, if we would either understand ourselves, or explain to others, those living oracles? And how is it possible, without it, to explain to others those living oracles? . . . Many cases of conscience are not to be solved, without the utmost exercise of our reason. . . . And it is only by acting up to the dictates of it, by using all the understanding which God hath given us, that we can have a conscience void of offense toward God and toward man.[8]

And Wesley must have had Luther in mind when he wrote:

> When, therefore, you despise or depreciate reason, you must not imagine you are doing God

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[8] *Sermons,* vol. ii, pp. 128, 129, "Reason Impartially Considered."

service: least of all, are you promoting the cause of God, when you are endeavoring to exclude reason out of religion. Unless you willfully shut your eyes, you cannot but see of what service it is both in laying the foundation of true religion, under the guidance of the Spirit of God, and in raising the superstructure. You see, it directs us in every point, both of faith and practice; it guides us with regard to every branch both of inward and outward holiness. Do we not glory in this, that the whole of our religion is "a reasonable service"? Yea, and that every part of it, when it is duly performed, is the highest exercise of our understanding?[9]

He could not endure the fantastic expositions of scripture inspired by the mystic philosophy of Jacob Boehme. He said he believed Boehme was a good man, but it is evident he considered him unbalanced. He gives "a specimen of the divinity and philosophy of the highly-illuminated Jacob Behmen." (Wesley always spelled his name Behmen.) Boehme takes the Lord's Prayer in German, divides each word into syllables, and gives a mystic meaning to each syllable. For example, *Unser vater im himmel,* is treated as follows:

> *Un* is God's eternal will to nature; *ser* comprehends in it the four forms of nature. *Va* is the matrix upon the cross; *ter* is Mercury in the cen-

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[9] *Ibid.,* p. 132.

> ter of nature. And they are two mothers in the eternal will. The one severs itself into fire, the other into the light of meekness and into water. For *va* is the mother of light which affords substantiality, and *ter* is the mother of the fire's tincture. *Im* is the heart; for the syllable *im* goes forth from the heart, and soundeth through the lips. *Him* means the creation of the soul; *mel* is the angelic soul itself: Which the heart on the cross in the center between the two mothers has comprehended, and with the word *him* framed it to a creature, viz., into *mel:* For *him* is the habitation of *mel.*

And so through the entire prayer each syllable is given, purely arbitrarily, a mystic meaning.[10]

Wesley points out that the text should have been the original Greek. But he asks, "Did a more absurd imagination ever enter into a madman's brain?" He considered such mysticism as "a snare of the devil," and "just contrary to the scriptural injunction: 'Be ye ready to give a reason of the hope that is in you.'"[11] It can be easily understood that anyone who had given fourteen years to surveying the physical science of his time would have a mind so developed that he could not tolerate any such stark nonsense as Boehme's mystic exegesis of the Lord's Prayer.

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[10] *Works,* vol. v, p. 703.

[11] *Journal,* vol. iii, p. 289. April 10, 1847.

Such irrational mysticism he could not endure; but mysticism that meant communion with God he held to be the very heart of religion, and he was willing to make any sacrifice to bring it to men. Preaching was his divine calling. He raised it to a holy passion, not allowing anything in his life to take precedence of it; not even his marriage relationship. Henry Moore says:

> He has more than once mentioned to me that it was agreed between him and Mrs. Wesley previous to their marriage that he should not preach one sermon or travel one mile the less on that account. "If I should," he said, "my dear, as well as I love you I would never see your face again."[12] And he writes that he has often said that "It were better for me to die than not to preach the gospel of Christ."[13]

By this time there can be no doubt that mysticism was a dominant factor in the life of Wesley; and it is equally true that reason was a dominant factor in his life. When two such dominant factors meet in a personality it is difficult for some to reconcile them. So we have some strange estimates of Wesley.

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[12] Henry Moore: *The Life of the Rev. John Wesley, A.M., in which are included The Life of His Brother, the Rev. Charles Wesley, A.M.* Two volumes, vol. ii, p. 144. New York, 1825.

[13] *Works,* vol. vi, p. 638.

One very able student of Wesley has concluded that "he was sane, level-headed, and severely practical. While his essential nature was not of this world of time and sense, he remembered that he was in a world where body, soul, and spirit, must each and all take duty."[14] Coleridge interprets these factors more one-sided. He said Wesley had the logical but not the philosophical mind. But from the following it seems that Coleridge means not philosophical but mystical. He claims "that Wesley never rose above the region of logic and strong volition. The moment an idea presents itself to him, his understanding intervenes to eclipse it, and he substitutes a conception by some process of deduction. Nothing is immediate to him."[15]

To rise above "the region of logic" certainly is to rise above the philosophical; for, if philosophy means anything, it means a rational, a reasoned view of things. And to say that nothing is immediate to Wesley is to deny what some of those who opposed certain views of Wesley charged him with, namely, perceptible inspiration; a thing which Wesley vigorously reasserted and defended. Certainly no words could be clearer or more to the point than these:

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[14] George Eayrs: *John Wesley, Christian Philosopher and Church Founder*, p. 55. London, 1926.

[15] Robert Southey: *Life of Wesley*, vol. i, p. 122, note. Oxford, 1925.

> If you ask, but do not hold, "that Christian faith implies a direct, perceptible testimony of the Spirit, as distinguished from the suggestion of fancy, as light is distinguished from darkness; whereas we suppose he imperceptibly influences our minds?" I answer, "I do hold this." I suppose that every Christian believer, over and above that imperceptible influence, hath a direct perceptible testimony of the Spirit, that he is a child of God.[16]

In fact, Coleridge describes exactly the working of Wesley's mind—if we substitute *reason* for *understanding.* He grants, in spite of his saying, that "nothing is immediate to him," that "the moment an idea presents itself to him" which is immediate or it is nothing, "the understanding intervenes to eclipse it [the immediate idea], and he substitutes a conception by some process of deduction." Now, one of Coleridge's pet ideas was his distinguishing reason and understanding. By reason he means the supersensuous. "Reason and the objects of reason are wholly alien from sensation." By the understanding he means "the faculty judging according to sense."[17]

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[16] *Works,* vol. vi, p. 637.

[17] S. T. Coleridge: *Aids to Reflection,* Aphorism xx; *An Essay on Faith.*

While it must be said that neither usage nor etymology confirms Coleridge's endeavor to draw this distinction, making reason outside the category of the understanding altogether, we will not waste any time over words; but simply state that Wesley certainly would agree with Coleridge in saying that he always tried to test his immediate experiences by his reason.

Wesley not only worked out, as we have shown above, that the judgment of each individual must be final for him,[18] but he saw clearly that this is the teaching of Scripture. Here is his comment on 1 Cor. 14. 32:

> *For the spirit of the prophets is subject unto the prophets*—but what enthusiast considers this? The impulses of the Holy Spirit, even in men really inspired, so suit themselves to their rational faculties, as not to divest them of the government of themselves, like the heathen priests under their diabolical possessions. Evil spirits threw their prophets into such ungovernable ecstasies, as forced them to speak and act like madmen. But the Spirit of God left his prophets the clear use of their judgment, when and how long it was fit for them to speak, and never hurried them into improprieties, either as to matter, manner, or time of their speaking.[19]

It is ironical to find the author of *Aids to*

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[18] *Journal,* vol. iii, p. 72.

[19] *Explanatory Notes Upon the New Testament.*

Reflection charging the mystical Wesley with corrupting inspiration with reason. Certainly, Wesley would have pleaded, if he had been confronted with this charge, guilty without the slightest hesitation. In his comment upon the apostle Paul's conception of the mutual working of the Divine Spirit and the human spirit in inspiration, he reaffirms the undeniable fact that for the recipient of inspiration his judgment must be final. And this means that the Spirit when inspiring a prophet accommodates the message to the prophet's reason, which is the measure of his mental development. Then Wesley was exactly right in insisting that Christianity is based upon reason, and can and indeed should be justified by reason. And Coleridge's complaint really is that Wesley did not take a one-sided view. But how he could have missed Wesley's insisting upon "perceptible inspiration" when Wesley took the precaution to define it as "a direct perceptible testimony of the Spirit," which certainly is immediate or it is nothing, is certainly beyond us.

We have quoted previously Doctor Davenport's being impressed with the strange contradictions in Wesley's character: "The credulous and the critical, the superstitious and the rational, fanaticism and sound judgment, were well-nigh inextricably commingled." We wish to call attention to the fact in this connection that this is true of all human beings. Wesley was a great man, accomplishing one of the greatest pieces of work in the history of the race; and hence his weaknesses were accentuated, both in fact and by the interpretation of others. His amazing energy offered opportunities for the expression of lack of poise. Now, to be perfectly poised on all occasions is to have a perfectly integrated personality at all times. And this is expecting too much of human beings. We are all, in fact, specimens of "multiple personality." The successful performances of "psychological murder" accomplished by Dr. Morton Prince,[20] and by Dr. H. H. Goddard,[21] make it clear that even in extreme cases of complexes which cause those who have them to appear as different personalities at different times, harmony can be restored so that such a subject will be seen to be a unit with a fairly constant and dependable personality. What is true of these extreme cases is true of all of us in a degree. As these two investigators have proven, there is no magic, black or white, that is the cause, but simply an overemphasis of normal powers of the personality. The prominence of Wesley, and the nature of his dominant traits, mysticism and rationalism, which are not contradictory, but which are to some difficult to reconcile, made his case appear remarkable to Doctor Davenport, and doubtless to many others. The difference in individuals in this matter is not in principle but degree.

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[20] Morton Prince: *The Dissociation of a Personality.* Longmans, Green and Company. New York, 1906.

[21] H. H. Goddard, *Two Souls in One Body.* Dodd, Mead and Company. New York, 1927.

Wesley was not one of those who were contented to take one world at a time. The unseen and eternal ever penetrated the seen and the temporal with him. He was conscious of the danger of his "running into excess." He thanks a correspondent for assisting him in this respect. He writes:

> I detest all zeal which is any other than the flame of love. Yet I find it not easy (at least to me) to be "always zealously affected in a good thing," without being sometimes so affected in things of an indifferent nature. Nor do I find it always easy to proportion my zeal to the importance of the occasion; and to temper it duly with prudence, according to the various and complicated circumstances that occur. I sincerely thank you for endeavoring to assist me herein, to guard me from running into excess. I am always in danger of this, and yet I daily experience a far greater danger of the other extreme. To this day I have abundantly more temptation to lukewarmness than impetuosity; to be a saunterer *inter sylvas Academicas,* a philosophical sluggard, than

an itinerant preacher. And, in fact, what I now do is so exceedingly little, compared with what I am convinced I ought to do, that I am often ashamed before God, and know not how to lift up mine eyes to the height of heaven![22]

He was sincere in facing the danger of going to one or the other of the two extremes, overemphasizing the mystical or the rational element. After reading Richard Baxter's *The Certainty of the World of Spirits,* he writes: "It contains several well-attested accounts; but there are some which I cannot subscribe to. How hard is it to keep the middle way; not to believe too little or too much!"[23] Constitutionally, as we have seen, Wesley was rationalistic, even to the extent of being a philosophical skeptic; but he was also constitutionally, as much as ever was Spinoza, a God-intoxicated man. To poise these two factors was his great problem. The extreme of one meant fanaticism; the extreme of the other meant skepticism; the one led to insane zeal, such as he found in Boehme's mystical interpretations of the syllables of the Lord's Prayer in German; the extreme of the other led to mental suicide, which so depressed Wesley that he confessed he was tempted to commit physical suicide.[24] Mysticism assured him of being filled with all the fullness of God; rationalism assured him of the preservation of his own individuality: the correlation of the two meant the living a full-rounded, healthy life. And there must be correlation for Wesley. It was impossible for him to take the attitude that Michael Faraday did—the absolute divorce of intellectual and religious things. Faraday, in an address on "Mental Education," in 1854, said:

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[22] *Works,* vol. vi, p. 633.

[23] *Journal,* vol. v, p. 103. December 10-14, 1764.

> Let no one suppose for a moment that the self-education I am about to command, in respect to the things of this life, extends to any considerations of the hope set before us, as if man by reasoning could find out God. It would be improper here to enter upon this subject further than to claim an absolute distinction between religious and ordinary belief. I shall be reproached with the weakness of refusing to apply those mental operations which I think good in respect of high things to the very highest. I am content to bear the reproach.[25]

Wesley could never have understood such departmental-tight mental operations, one set applying to religion and another to natural science. He must have correlation; mysticism alone did not meet his need; rationalism alone did not meet his need. Either alone was an extreme; correlated they gave him the golden mean.

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[24] *Sermons,* vol. ii, p. 130.

[25] Silvannus P. Thompson: *Michael Faraday: His Life and Work,* p. 292. Cassell and Company. London, 1901.

Did these two human factors correlate, that is, mutually relate themselves, in Wesley? How did the correlation come to be? And did Wesley, as a result of that correlation, live a full-rounded, healthy life? In his devotion to natural philosophy or, as we would say, physical science, we find that he found the means of the correlation; and thus he lived the full-rounded, healthy life. But the answers to these questions are more properly given in the next chapter.

CHAPTER XII

WESLEY AND THE MINISTRY OF PHYSICAL SCIENCE

THE correlation of the two dominant factors, mysticism and rationalism, in Wesley's personality was effected by his devotion to the study of physical science. With his tendency to go to extremes, of which he was fully aware, he was ever exposed to running into fanaticism, on the one hand, or skepticism on the other. To make his two fiery steeds, mysticism and rationalism, pull together so that they would be constructive rather than destructive, it was necessary that there should be something to check Wesley's naturally alert mind from its ever-threatening impetuosity. The study of physical science met this need. He seemed to realize this, for he says, "Natural history is the best logic, because it best teaches us to suspend our judgment."[1] He said that he was always exposed to excess, yet, in the same connection, he said he was in more danger from lukewarmness than from impetuosity. "Lukewarmness" with Wesley meant reading philosophy when he should be at the work of an itinerant preacher. One of his correspondents told him that this was "overdone humility." It may have been this, but it was genuine in Wesley. It was an example of his "running into excess" in self-criticism. He needed to suspend judgment just here to protect himself from the excess of self-criticism. And natural history, or natural science, was calculated to do this for him.

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[1] *Survey*, vol. ii, p. 253; Bonnet: *Contemplation de la Nature*, vol. i, p. 194.

The correlation was effected unconsciously. It was later, after years of the study of physical science, that he saw that it was the best logic. For the study began when he was an undergraduate at Oxford University. And we have seen how the subject of physical science "would fascinate his mind, absorb all his attention, and divert him from the pursuit of the more important objects of his own profession."[2] So it was not an acquired intellectual taste but a natural penchant. And it was the saving factor in his mental make-up. It saved him from fanaticism.

Bishop Berkeley said, "Nature is in the proper sense of the word a language of God."[3] And Wesley agreed with this. His words are, "The world around us is the mighty volume wherein God hath declared himself. Human language and characters are different in different nations. And those of one nation are not understood by the rest. But the book of nature is written in a universal character, which every man may read in his own language. It consists not of words, but things which picture out the Divine perfections."[4]

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[2] John Whitehead: *Life of John Wesley,* vol. ii, p. 286.

[3] George Berkeley: *Alcyphon,* Fourth Dialogue.

"'Tis elder Scripture, writ by God's own hand,
Scripture authentic! uncorrupt by man."

In nature, Wesley found an outer experience which ran parallel with his inner experience. And it should not be perplexing to us that Wesley, for whom "God was the only absorbing passion,"[5] would be such a devotee of physical science; for the inner voice and the outer voice spoke to him the same message. The study of nature taught him that God is the Eternal Self-Existent Reason, the First Cause, the All-Wise and All-Powerful Mind, the Supreme Being, the One Sole Being who is out of the universal chain of nature because he alone made it.[6] And we come to our knowledge of God through our study of nature:

> Properly speaking, we have no idea of God. We come to our knowledge of his very existence, not from any idea of him, but from our reasoning upon the works of the visible creation. And

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[4] *Survey,* vol. i, p. 308.

[5] J. Augustine Leger: *John Wesley's Last Love.* Quoted by Dimond, *Psychology of the Methodist Revival,* p. 67.

[6] *Survey,* vol. ii, pp. 182-194.

> hence, for want of a simple and direct idea, we form an indirect and very complex notion of him.

This is the first stage in the process. Having proceeded so far, we then interpret this notion by our inner life:

> This we do in the best manner we can, by removing from him all the imperfections of the creatures, and attributing to him all their perfections, especially those of our own minds. Yet in truth, even these cannot be supposed to be in God, as they are in us. And therefore we are said to ascribe them to him only in the *abstract:* which is saying, in other words, that they are of a different species in the Creator, from what they are in the creature.
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> Accordingly, that there are incomprehensible perfections in God, answerable to knowledge and power in man, whereof these are only the faint, though true resemblances, is natural and easy to conceive. But the conceiving his power as an ability to change things infinitely; his knowledge as only infinite thinking; the multiplying and enlarging our own perfections in number or degree only, to the utmost stretch of our capacity, and attributing them so enlarged to God, is no more than raising up an unwieldy idol of our own imagination, without any foundation in nature.[7]

The more one thinks of what Wesley says

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[7] *Survey,* vol. ii, pp. 440-441.

of the process by which we come to our ever enlarging idea of God, the more one will be impressed with its essential correctness. As children we take our sense impressions and try to relate them to our meagerly developed minds. Later we study these sense data systematically, that is, scientifically; and we are impressed with the majesty of "the works of the visible creation." We have no experience of the cause of anything except that of our own minds. And our ideal thought is more or less blurred when it is expressed in the effect. Nevertheless, it is the only key we have. Then with the imperfections of causation as it works in our own minds we seek to rise to causation as it is in its perfection in the Divine Mind. To be sure, this is anthropomorphism. But none of us can ever escape anthropomorphism. That would mean that we could apprehend some things apart from the laws of our mental nature. There are three kinds of anthropomorphism. The crudest kind is that which attributes to God a physical form like the human body. This is what we may expect to find among savages. Then there is the anthropomorphism which ascribes human limitations to God. This is the most prevalent, even having a strong hold upon minds that should be free from it. And finally there is the anthropomorphism which we have in the words just quoted from Wesley, granting a likeness in kind between the Divine Spirit and the human spirit, but insisting that the difference in degree is not only immeasurable but incomprehensible. This is the anthropomorphism of the disciplined mind. And the disciplined mind of physical science reveals not only the greatness of God but also the greatness of men; for if we are one in kind with God, differing only in degree, we cannot think meanly of our essential nature, though we may become mean by refusing the task of developing harmoniously our potentialities.

In the very nature of things, as soon as we grasp an enlarged thought we immediately ascribe it to God. Thus if we keep intellectually alive, we are ever gaining a larger and larger conception of God. And it is the study of physical science, which is ever extending the spatial and temporal boundaries of the universe, that gives concrete contents to our philosophical and theological conceptions of the attributes of God: omnipotence, omniscience, omnipresence, transcendence, immanence, and all-embracing love. The telescope is a means to this end by introducing men to "the sublime and interesting subjects of astronomy, and the philosophy connected with it." These subjects, Wesley goes on to say, would exhibit nature on a more extended scale of grandeur and simplicity. They would tend to harmonize the universe and unfold the true relations of nature. They would display in more enlarged characters and appropriate features the universal creation and the universal Creator. They would show that immortality was stamped on the universe; that the essential principle of all being, and of every species of being, was active, immutable, and universal. It would tend to excite in the mind of the creature reverence, gratitude and piety, and give an importance to being, even the meanest of the works of God.[8]

The microscope introduces us to the infinitesimal world, the beauties of which cannot be discerned by the naked eye, and which allows us to see perfection in the smallest things. Thus we see the infinite care, wisdom, and power of the Creator in the infinitely large and the infinitely small; and the great conceptions of omnipotence, omniscience, omnipresence, transcendence, immanence, and all-embracing love of God are given concrete contents.

So far was physical science from disturbing Wesley's religious beliefs, fundamental theological principles, or his faith in the Bible as containing the truth of God, it actually confirmed those beliefs and principles, and strengthened his faith in the Bible. The net result of the twenty-one years of his "leisure" time spent in making and revising his survey of the natural sciences of his day is that he can testify that he could account for the wonderful works of nature only by tracing

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[8] *Survey,* vol. ii, p. 114.

> their being, dependence, and government, unto thee, the First Cause of all. And by this tracing of things to their original I was led by a demonstrative conviction that there is a God who is the great cause, both of their being and their motions; yea, that there is but one God; that he is most powerful, most wise, knowing all things, governing all things, supporting all things. Upon these convictions I was strengthened in the belief of the Holy Word, which had so great a congruity with these truths.[9]

And Wesley found that the study of physical science enlarged and enriched his personal religious life:

> And upon these convictions I did learn the more to honor, reverence, and admire thee; to walk humbly, and sincerely, and lawfully, before thee, as being present with me, and beholding me; to love and adore thee, as the fountain of all being and good. When I looked upon the glory and usefulness of the sun I admired the God that made it, chalked out its motions, placed it in that due distance from the earth, for its use and con-

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[9] *Survey,* vol. ii, p. 463.

> veniency. When I look upon the stars, those huge and wonderful balls of light, placed at that immense distance from the inferior bodies, and one from another, their multitude and motion; I admired the wisdom and power of that God, whose hand spans the heavens, and has fixed everything in its place. Nay, when I looked upon the poor little herbs that arise out of the earth, and considered the secret spark of life, which is in every one of them, that attracts, increaseth, groweth, produces seed, preserves them and their kinds; the various virtues that are in them, for the good, medicine, and delight, of the more perfect creatures; my mind was sweetly carried up, to the adoration and praise of that God, whose wisdom and power and influence and government are seen in these footsteps of his goodness.[10]

Wesley discovered that the study of physical science led him to some very important philosophical and theological conclusions. We have seen that his contemplation of the works of nature led logically to one First Great Cause. But it did more. It compelled certain conclusions as to the nature of that First Cause. It is Eternal, Self-Existent Reason,"[11] who is "one, all-wise Creator,"[12] "the God of the universe, and not merely of this little, struggling world of ours."[13]

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[10] *Ibid.,* vol. ii, pp. 463-464.

[11] *Ibid.,* vol. ii, p. 187.

[12] *Ibid.,* vol. i, p. 436.

[13] *Ibid.,* vol. ii, p. 134.

> In short, the whole universe is a picture, in which are displayed the perfections of the Deity. It shows not only his existence but his unity, his power, his wisdom, his independence, his goodness.[14]

This was Wesley's reward for having studied nature seriously. He was not satisfied with simply beholding the beauties of nature as they appeared to the senses. He "esteemed it part of the duty, which the wise God of nature requires of the children of men, who for that very end, exposed these his works to the view of his intelligent creatures, and gave us not only eyes to behold, but reason, in some measure, to understand them." Thus he looked upon the study of physical science as a duty he and "the children of men" owe to God. Then he tells us his reward:

> Therefore I have strictly observed the frame of the world, and its several parts, the motion, order, and divine economy of them. I have searched into their quality, causes, and operations; and have discovered as great, if not greater matter of admiration therein, than in the beauty, which at first view they presented to my sense.[15]

The study of physical science helped Wesley to know God better, as has been seen in the above quotations. We now parallel these paragraphs for general substance and attitude with some words from a modern scientist:

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[14] *Survey*, vol. i, p. 368.
[15] *Ibid.*, vol. ii, p. 463.

> To have a strong and well founded faith in God we must know him. We must study his self-revelation in nature, in history, and, best of all, in the Bible, and when we have found out a little of his purposes, then we are to make our purposes the same, for it is in vain that a man fights against God. And physical science as well as the Bible says, "It is only the man who is on the Lord's side that succeeds in anything."[16]

We cannot close this chapter without calling attention to another great man to whom physical science ministered spiritually, as it did to Wesley. He was an older contemporary of Wesley, dying when the younger man was twenty-four years of age. Wesley was fond of speaking of him as "the great Newton." The contemporaries of Sir Isaac Newton seemed to exhaust their vocabularies in praising him, and there has been little if any change in this respect in those who have followed, who really know the history of science, to the present. Newton, more than any other single mind, is responsible for the prevailing scientific attitude to-day. "Newton's supremacy in modern science, the most successful movement of thought that history so far records, stands unquestioned."[17] He was a transcendent genius. He performed

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[16] Edwin E. Slosson: *Sermons of a Chemist.*

> the most stupenduous single achievement of the human mind. . . . For him to invent the needed tool and by its aid to reduce the major phenomena of the whole universe of matter to a single mathematical law, involved his endowment with a degree of all the qualities essential to the scientific mind—pre-eminently the quality of mathematical imagination—that has probably never been equaled. Newton enjoys the remarkable distinction of having become an authority paralleled only by Aristotle in an age characterized through and through by rebellion against authority.[18]

Like Wesley, Newton found that physical science led him to one God, the intelligent Creator of the universe. He writes:

> Now by the help of these principles all material things seem to have been composed of the hard and solid particles above mentioned, and variously associated in the first creation by the counsel of an intelligent Agent. For it became Him who created them to set them in order. And if he did so, it's unphilosophical to seek for any other origin of the world, or to pretend that it might arise

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[17] Edwin Arthur Burtt: *The Metaphysical Foundations of Modern Physical Science*, p. 203. Reprinted by permission of Harcourt, Brace and Company, Inc.

[18] *Ibid.*, p. 203.

> out of a chaos by the mere laws of nature; though being once formed, it may continue by those laws for many ages.[19]

Modern physical science gets its mechanical idea of nature from Newton. But to hold that the mechanical idea as self-sufficient was considered by Newton to be unphilosophical, and the only rational conclusion was that material things were created by an intelligent Agent. In the following spirited paragraph he challenges all opposition:

> As for rejecting such a medium ("a dense fluid"), we have the authority of those the oldest and most celebrated philosophers of Greece and Phœnicia, who made a *vacuum* and atoms, and the gravity of atoms, the first principles of their philosophy, tacitly attributing gravity to some other cause than dense matter. Later philosophers banish the consideration of such a cause out of natural philosophy, feigning hypotheses for explaining all things mechanically, and referring other causes to metaphysics. Whereas the main business of natural philosophy is to argue from phenomena without feigning hypotheses, and to deduce causes from effects, till we come to the very first cause, which certainly is not mechanical; and not only to unfold the mechanism of

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[19] Sir Isaac Newton: *Knt. Opticks; or, A Treatise of the Reflections, Refractions, Inflections and Colours of Light.* The Second Edition, with Additions, p. 378. London, 1718. Fourth Edition, corrected, 1730.

the world, but chiefly to resolve these and like questions. What is there in places almost empty of matter, and whence is it that the sun and planets gravitate toward one another, without dense matter between them? To what end are comets, and whence is it that planets move all one and the same way in orbs concentric, and what hinders the fixed stars from falling upon one another? How came the bodies of animals to be contrived with so much art, and for what ends were their several parts? Was the eye contrived without skill in optics, or the ear without knowledge of sounds? How do the motions of the body follow from the will, and whence is the instinct in animals? Is not the sensory of animals that place to which the sensitive substance is present, and into which the sensible species of things are carried through the nerves and brain, that there may be perceived by their immediate presence to that substance? And these things being rightly dispatched, does it not appear from phenomena that there is a Being incorporeal, living, intelligent, omnipresent, who, in infinite space, as it were in his sensory, sees the things themselves intimately, and thoroughly perceives them; and comprehends them wholly by their immediate presence to himself? Of which things the images only carried through the organs of sense into our little sensorium, are there seen and beheld by that which in us perceives and thinks. And though every true step made in this philosophy brings us not immediately to the knowledge of the First Cause, yet it brings us near to it, and on that account it is to be highly valued.[20]

And Newton closes his great work, *Opticks*, claiming that the study of physical science enlarges the bounds of moral philosophy. His statement is:

> And if natural philosophy in all its parts, by pursuing this method, shall at length be perfected, the bounds of moral philosophy will also be enlarged. For so far as we can know by natural philosophy what is the first cause, what power he has over us, and what benefits we receive from him, so far our duty toward him, as well as that toward one another, will appear to us by the light of nature. And no doubt, if the worship of false gods had not blinded the heathen, their moral philosophy would have gone further than to the four cardinal virtues; and instead of teaching the transmigration of souls, and to worship the sun and the moon, and dead heroes, they would have taught us to worship our true author and benefactor.[21]

The ministry of physical science was a reality to both Newton and Wesley. Their descriptions, as we have seen, of this ministry are identical in substance, and remarkably alike verbally. The study of physical science gave them intellectual satisfaction and genuine pleasure; it also helped them to enlarge their moral ideas; and it led them to the One, Intelligent, First Cause, whose adorable attributes revealed in nature were the same as those found in the Bible.

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[20] Sir Isaac Newton: *Opticks,* pp. 343-344.

[21] *Ibid.,* p. 381.

CHAPTER XIII

THE CROWNING LEGACY OF WESLEY

WESLEY, according to the testimony of his contemporaries, realized fullness of life. He believed that Christ came that men might have life, and have it abundantly. The testimonies agree that he was one of the happiest and most cheerful of men.

> It was impossible to be long in his company, either in public or private, without partaking of his placid cheerfulness; which was not abated by the infirmities of age or the approach of death, but was as conspicuous at fourscore and seven as at one and twenty.[1]

And Alexander Knox, who was a member of the Methodist society for a while, but later withdrew because of certain doctrinal differences, who knew Wesley for the twenty-three years preceding his death, wrote for a newspaper an article on the personal character of Wesley. The following is from that sketch:

> So fine an old man I never saw! The happiness of his mind beamed forth in his countenance: every look showed how fully he enjoyed "the gay remembrance of a life well spent."

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[1] John Whitehead: *Life of John Wesley,* vol. ii, p. 288.

Wherever he went he diffused a portion of his own felicity. Easy and affable in his demeanor, he accommodated himself to every sort of company; and showed how happily the most finished courtesy may be blended with the most perfect piety. In his conversation, we might be at a loss whether to admire most his classical taste, his extensive knowledge of men and things, or his overflowing goodness of heart. While the grave and serious were charmed with his wisdom, his sportive sallies of innocent mirth delighted even the young and thoughtless; and both saw in his uninterrupted cheerfulness the excellency of true religion. No cynical remarks on the levity of youth embittered his discourses. No applausive retrospect of past times marked his present discontent. In him even old age appeared delightful, like an evening without a cloud; and it was impossible to observe him without wishing fervently, "May my latter end be like his!" . . . For my own part, I never was so happy as while I was with him, and scarcely ever felt more poignant regret than at parting from him; for well I knew "I ne'er should look upon his like again!"[2]

Twenty years later, writing at the wish of Robert Southey, Knox said:

Now, as then, I feel it to be a case in which there was no room for delusion. Such unclouded sunshine of the breast in the deepest winter of

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[2] Henry Moore: *Life of the Rev. John Wesley,* vol. ii, pp. 379-380.

> age and on the felt verge of eternity bespoke a mind whose recollections were as unsullied as its present sensations were serene. . . . .
>
> His countenance, as well as conversation, expressed an habitual gayety of heart, which nothing but conscious virtue and innocence could have bestowed. He was, in truth, the most perfect specimen of moral happiness that I ever saw, and my acquaintance with him has done more to teach me what a heaven upon earth is implied in the maturity of Christian piety than all I have elsewhere seen, or heard, or read, except in the sacred volume.[3]

Wesley realized in his personal life what he claimed Christ came to make possible for all men: "To bless men, to make men happy, was the great business for which our Lord came into the world,"[4] He experienced this happiness beginning with the experience he had when listening to the reading of Martin Luther's preface to the Epistle to the Romans in the meeting in Aldersgate Street, London; and he realized that the only way he could retain that experience was to endeavor to bring it to all who should wish it. This experience was the love of God in his heart. And the only way he could bring the message of God's love for men to men was by preaching and living love. And love for God and love for men became the controlling forces in his life.

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[3] Robert Southey: *Life of Wesley*, vol. ii, pp. 344-349.

[4] Wesley: *Explanatory Notes Upon New Testament*, Matthew 5. 2.

Until the spiritual crisis which he experienced at the meeting in Aldersgate Street, May 24, 1738, Wesley's life was a continuous struggle with doubt. He tried to meet the struggle with a rigid régime which marked out and regulated every hour of the day; so that, to us, instead of his life manifesting that freedom which is the result of a triumphant faith, it, rather, suggests the mechanical grind of a prison. Prayer, as he practiced it, instead of appearing as joyful communion with his God, seems that he was doing penance for some gross sins. And his philanthropy appears as a debt that he must pay, imposed from without. He, and not a few writers following him, have spoken of the change he experienced that memorable evening as his conversion. But this is far from being correct. Southey states that Wesley himself modified his attitude: "In after life, when Wesley looked back upon this part of his progress, he concluded that he had the faith of a servant, though not of a son."[5]

The Aldersgate Street experience meant that he could have the assurance that God loved him; but it also taught him that he could not retain that assurance without his manifesting love to his fellow men. So in the preface of his *Principles of a Methodist* he holds that even in controversial writings one must show "in every sentence, that he loves his brother only less than the truth."[6] This was written in 1740. Wesley lived for fifty-one years longer, but he never changed in making love for God and for man the very essence of the gospel of Christ. And, as we have seen, he proclaimed this great essential by precept and by example. He claimed, in his sermon on "Scriptural Christianity," preached at St. Mary's, Oxford, 1744, and the last before the University of Oxford, that love is the essence of Christianity. This he held to be "Christianity; not as it implies a set of opinions, a system of doctrines, but as it relates to men's hearts and lives."[7]

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[5] Robert Southey: *Life of Wesley,* vol. i, p. 111.

Did Wesley in the presence of the Oxford dons cast orthodoxy to the winds? Not exactly. But before the dons and before all the world he made it secondary and not first. He states that his brother, Charles, and himself, in founding the movement which later became known as Methodism, had in mind but one idea, and that was to tell those who wished to know what "true Christianity was." And the very first point was "that orthodoxy, or right opinions, is, at best, but a very slender part of religion, if it can be allowed to be any part of it at all."[8]

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[6] *Works,* vol. v, p. 254.

[7] *Sermons,* vol. i, p. 34.

Methodism is universally acknowledged to be one of the greatest movements in the history of the Christian Church. Isaac Taylor, not a very sympathetic critic of Wesley, declares that Methodism has "so given impulse to Christian feeling and profession, on all sides, that it has come to present itself as the starting-point of our modern religious history."[9] This being so, it is highly desirable that modern Christianity in general, and Methodism in particular, remember that the very first point that the Wesleys insisted upon, and which they considered one of the sources of their great success, was:

"First, that orthodoxy, or right opinions, is, at best, but a very slender part of religion, if it can be allowed to be any part of it at all."

With this as Wesley's first point, and with the content of his message of true religion as being the loving of God with all our heart, and soul, and strength, as having first loved *us,* as the fountain of all the good we have received, and of all we ever hope to enjoy; and the loving every soul which God hath made, every man on earth, as our own soul,[10] the movement was a marvelous success. Wesley said the success of the movement had not been equaled since the time of Constantine, and he adds: "I believe, hardly can either ancient or modern history supply us with a parallel instance."[11] Isaac Taylor goes further. He says:

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[8] *Works,* vol. v, p. 176.

[9] Quoted by Henry C. Sheldon in his *History of the Christian Church,* vol. iv, p. 92.

> It would not be easy, or not possible, to name any company of Christian preachers, from the apostolic age downward to our times, whose proclamation of the gospel has been in a larger proportion of instances effective, or which has been carried over so far a surface, with so much power, or with so uniform a result. No such harvest of souls is recorded to have been gatherd by any body of contemporary men since the first century.[12]

Wesley did not understand that love for men was exhausted in saving their souls in any narrow religious sense. It meant to save the entire man, spiritually, mentally, and physically. One of the great historians of England, J. R. Green, concludes his treatment of this religious movement, after declaring that "the Methodists were the least result of the Methodist revival," with the following statement of its influence upon social life:

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[10] *Works,* vol. v, p. 5.

[11] *Ibid.,* vol. v, p. 145.

[12] Henry C. Sheldon: *History of Christian Church,* vol. iv, p. 93.

> A yet nobler result of the religious revival was the steady attempt, which has never ceased from that day to this, to remedy the guilt, the ignorance, the physical suffering, the social degradation of the profligate and the poor. It was not until the Wesleyan impulse had done its work that this philanthropic impulse began.[13]

All of this magnificent work which we have recorded is the result of Wesley placing the emphasis upon active love for God and for men instead of trying to found a revival of religion on orthodoxy, or right opinions. He seems to have had the conviction that the best conserver of orthodoxy was to preach and practice the love of God for men. So he could boast of the orthodoxy of his followers. He puts the questions: "Where are those who have approved and do approve themselves more orthodox, more sound in their opinions? Is there a Socinian or Arian among them all? Nay, were you to recite the whole catalogue of heresies enumerated by Bishop Pearson, it might be asked, Who can lay anyone of these to their charge?"[14]

Wesley did not discount orthodoxy; he simply put it in its right place. The best statement of his position is to be found in the first paragraph of his description of the distinguishing marks of a Methodist:

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[13] J. R. Green: *History of the English People,* vol. iv, p. 273.

[14] *Works,* vol. v, p. 145.

> The distinguishing marks of a Methodist are not his opinions of any sort. His assenting to this or that scheme of religion, his embracing any particular set of notions, his espousing the judgment of one man or another, are all quite wide of the point. Whosoever, therefore, imagines that a Methodist is a man of such or such an opinion is grossly ignorant of the whole affair; he mistakes the truth totally. We believe, indeed, that "all Scripture is given by the inspiration of God"; and herein we are distinguished from Jews, Turks, and Infidels. We believe the written Word of God to be the only and sufficient rule of both Christian faith and practice; and herein we are fundamentally distinguished from those of the Romish Church. We believe Christ to be the eternal, supreme God; and herein we are distinguished from the Socinians and Arians. But as to all opinions which do not strike at the root of Christianity, we think and let think. So that, whatsoever they are, whether right or wrong, they are no distinguishing marks of a Methodist.

After Wesley states what are not the marks of a Methodist, he then puts the positive question and answers it:

> "What then, is the mark? Who is a Methodist, according to your own account?" I answer: "A

Methodist is one who has 'the love of God shed abroad in his heart by the Holy Ghost given unto him'; one who 'loves the Lord his God with all his heart, and with all his soul, and with all his mind, and with all his strength.'" This involves love for one's fellow man. "This commandment is written in his heart, 'That he who loveth God, love his brother also.'"[15]

Even in what might be called fundamental doctrines of Christianity, Wesley seemed to apply the principle he laid down in his letter to the Rev. Mr. Venn:

> If anyone will convince me of my errors, I will heartily thank him. I believe all the Bible, as far as I understand it, and I am ready to be convinced. If I am a heretic, I became such by reading the Bible. All my notions I drew from thence; and with little help from men, unless in the single point of justification by faith. But I impose my notions upon none: I will be bold to say, there is no man living further from it. I make no opinion the term of union with any man: I think and let think. What I want is, holiness of heart and life. They who have this are my brother, sister, mother.[16]

His most basic principle in religion seems to be that he found God revealing himself in the Bible, which he had to interpret by his reason. And he granted the same privilege to every other person. But he insisted that the Christian

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[15] *Works,* vol. v, pp. 241-243.

[16] *Ibid.,* vol. vii, p. 304.

> above all, remembering that God is love, he is conformed to the same likeness. He is full of love to his neighbor; of universal love; not confined to one sect or party; not restrained to those who agree with him in opinions, or outward modes of worship, or to those who are allied to him in blood, or recommended by nearness of place. Neither does he love those only that love him, or that are endeared to Him whose mercy is over all his works. It soars above all these scanty bounds, embracing neighbors and strangers, friends and enemies; yea, not only the good and gentle, but also the froward, the evil and the unthankful. For he loves every soul that God has made, every child of man, of whatever place or nation. And yet this universal benevolence does in no wise interfere with a peculiar regard for his relations, friends, and benefactors, a fervent love for his country, and the most generous virtue.[17]

His attitude was that men should proclaim their positive beliefs; if they were not of God they would come to naught. He firmly believed in Gamaliel's test (Acts 5. 34-40), and wished it to be applied to the Methodist movement. All could not be right in opinion, but, he held, all could love; and to such God would speak, "being taught of God, by his inward voice, all the essentials of true religion." He cites a Mohammedan who had "all the principles of true religion and undefiled."[18] He said the same of a Jew who held that the single chapter on love, thirteenth of First Corinthians, "contained the whole of true religion."[19]

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[17] *Ibid.,* vol. v, p. 753.

Wesley then did not allow differences of theological opinion to separate him from his fellow men; and we cannot imagine him for an instant objecting to a scientific doctrine on the ground that it disagreed with biblical statements. If he were convinced that they did, he would have said it was not within the province of the Bible to teach science. And he would never have allowed one's holding a scientific teaching which differed from a scriptural passage to make any difference between such a one and himself. And if he had been here, he would have rebuked the narrow spirit of some of his followers who continually refused to allow Herbert Spencer's father to place books on science in the Methodist library, and whose narrow attitude finally caused him to withdraw from the Methodists. Spencer's father and mother were Wesleyan

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[18] *Sermons*, vol. ii, p. 384.

[19] *Ibid.*, vol. ii, p. 279.

Methodists, but his father finally left the Methodists; and Spencer states the reason:

> I believe the immediate cause of his final secession, was his frequent contact with the Methodist book committee, a committee which managed the Methodist library. Occasionally he tried to get ordered in their library books which he regarded as really instructive—books of science and others of secular kinds.[20]

And for those who professed to be followers of Christ, he demanded not that they should agree with him in doctrine but that they should work together in promoting holiness of life and every good work. He said, "I desire to have a league offensive and defensive with every soldier of Christ."[21]

Wesley realized that controversy profits but little. He said, "I never knew one man (or but one) write controversy, with what I thought a right spirit."[22] Henri Bergson takes a similar view: "It seems to me that in philosophy the time given up to refutation is generally time lost."[23] For, as Emerson states, "Kindness is necessary to perception"; and it is not easy to be kind in controversy. Arthur P. Stanley rejoiced in the conviction of John Wesley's dearest friend that "the main, fundamental, overpowering principle of his life was not the promotion of any particular doctrine, but the elevation of the whole Christian world in the great principles of Christian holiness and morality."[24]

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[20] Herbert Spencer: *An Autobiography,* vol. i, p. 82. Reprinted by permission of D. Appleton and Company.

[21] *Works,* vol. vii, p. 305.

[22] *Ibid.,* vol. v, p. 254.

[23] Henri Bergson: *Mind Energy,* p. 77. Reprinted by permission of Henry Holt and Company.

The crowning legacy of Wesley is his spirit of love which caused him to take a broad, tolerant attitude toward the opinions of others, and which caused him to lay down the first principle of the Methodist Revival, first in time and first in importance:

> "FIRST THAT ORTHODOXY, OR RIGHT OPINIONS, IS AT BEST BUT A VERY SLENDER PART OF RELIGION, IF IT CAN BE ALLOWED TO BE ANY PART AT ALL"

But this negative principle rested upon the more basic positive principle which was Wesley's crowning glory:

This love we believe to be the medicine of life, the never-failing remedy for all the evils of a disordered world, for all the miseries and vices of men.[25]

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[24] G. P. Bradley: *Recollections of Arthur Penrhyn Stanley,* p. 123.

[25] Wesley: *An Earnest Appeal,* 1743.

APPENDIX

GENERAL SCHOLIUM

"This most beautiful system of the sun, planets, and comets could only proceed from the counsel and dominion of an intelligent and powerful Being. And if the fixed stars are the centers of other like systems, these being formed by the like wise counsel, must be all subject to the dominion of One; especially since the light of the fixed stars is of the same nature with the light of the sun, and from every system light passes into all the other systems: and lest the systems of the fixed stars should, by their proxity, fall on each other mutually, he hath placed those systems at immense distances one from another.

"This Being governs all things, not as the soul of the world, but as Lord over all; and on account of his dominion he is wont to be called *Lord God* *παντοκράτωρ*, or *Universal Ruler;* for *God* is a relative word, and has a respect to servants; and *Deity* is the dominion of God not over his own body, as those imagine who fancy God to be the soul of the world, but over servants. The Supreme God is a Being eternal, infinite, absolutely perfect, but a being, however perfect, without dominion, cannot be said to be Lord God; for we say, 'My God, your God, the God of *Israel,* the God of Gods, and Lord of Lords'; but we do not say, 'My Eternal, your Eternal, the Eternal of *Israel,* the Eternal of gods'; we do not say, 'My Infinite, or my Perfect': these are titles which have no respect to servants. The word "God" usually signifies *Lord;* but every lord is not a God. It is the dominion of a spiritual being which constitutes a God: a true, supreme, or imaginary God. And from his true dominion it follows that the true God is a living, intelligent, and powerful Being; and, from his other perfections, that he is supreme, or most perfect. He is eternal and infinite, omnipotent and omniscient; that is, his duration reaches from eternity to eternity; his presence from infinity to infinity; he governs all things, and knows all things that are or can be done. He is not eternity or infinity, but eternal and infinite; he is not duration or space, but he endures and is present. He endures for ever and is everywhere present; and by existing always and everywhere, he constitutes duration and space. Since every particle of space is *always,* and every indivisible moment of duration is *everywhere,* certainly the Maker and Lord of all things cannot be *never* and *nowhere.* Every soul that has perception is, though in different times and in different organs of sense and motion, still the same indivisible person. There are given successive parts in duration, coexistent parts in space, but neither the one nor the other in the person of a man, or his thinking principle; and much less can they be found in the thinking substance of God. Every man, so far as he is a thing that has perception, is one and the same man during his whole life, in all and each of his organs of sense. God is the same God always and everywhere. He is omnipresent not *virtually* only, but also *substantially;* for virtue cannot subsist without substance. In him are all things contained and moved; yet neither affects the other: God suffers nothing from the motion of bodies; bodies find no resistance from the omnipresence of God. It is allowed by all that the Supreme God exists necessarily; and by the same necessity he exists *always* and *everywhere.* Whence also he is all similar—all eye, all ear, all brain, all arm, all power to perceive, to understand, and to act; but in a manner not at all human, in a manner not at all corporeal, in a manner utterly unknown to us. As a blind man has no idea of colors, so have we no idea of the manner by which the all-wise God perceives and understands all things. He is utterly void of all body and bodily figure, and can therefore neither be seen, nor heard, nor touched; nor ought he to be worshiped under the representation of a corporeal thing. We have ideas of attributes, but what the real substance of any thing is we know not. In bodies, we see only their figures and colors, we hear only the sounds, we touch only their outward surfaces, we smell only the smells, and taste the savors; but their inward substances are not to be known either by our senses, or by any reflex act of our minds: much less, then, have we any idea of the substance of God. We know him only by his most wise and excellent contrivances of things, and final causes;

we admire him for his perfections; but we reverence and adore him on account of his dominion; for we adore him as his servants; and a god without dominion, providence, and final causes, is nothing else but Fate and Nature. Blind metaphysical necessity, which is certainly the same always and everywhere, could produce no variety of things. All that diversity of natural things which we find suited to different times and places could arise from nothing but the idea and will of a Being necessarily existing. But, by way of allegory, God is said to see, to speak, to laugh, to love, to hate, to desire, to give, to receive, to rejoice, to be angry, to fight, to frame, to work, to build; for all our notions of God are taken from the ways of mankind by a certain similitude, which, though not perfect, has some likeness, however. And thus much concerning God, to discourse of whom from the appearance of things does certainly belong to natural philosophy."—Sir Isaac Newton, *The Mathematical Principles of Natural Philosophy.* Translated into English by Andrew Motte. London, 1803.

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